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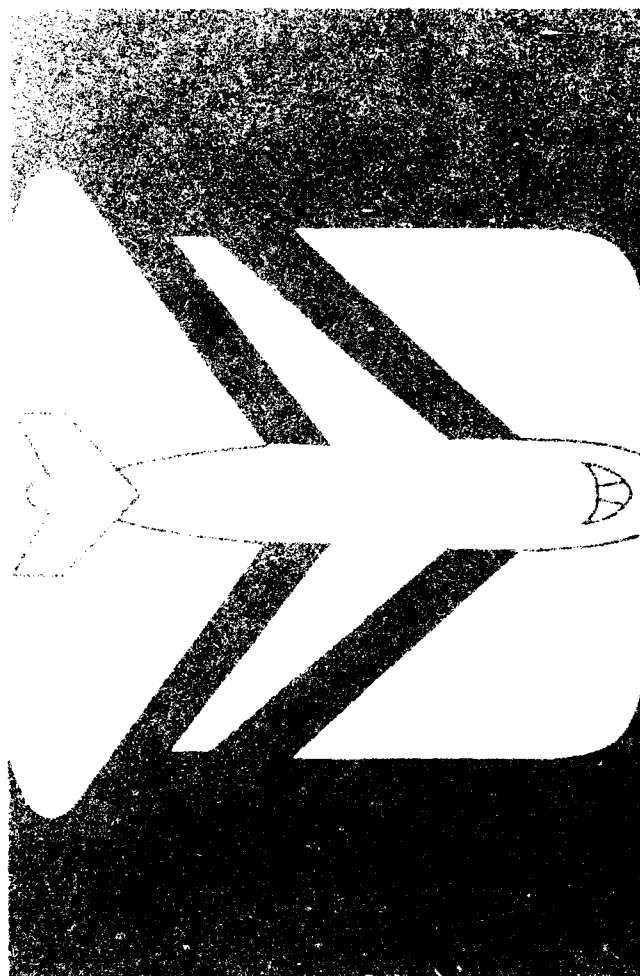
U.S. Department  
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# General Aviation Activity and Avionics Survey

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Calendar Year 1989



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# General Aviation Activity and Avionics Survey

Calendar Year 1989

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Airport Activity Statistics of Certificated Route Air Carriers is a joint publication of the Federal Aviation Administration (FAA) and the Research & Special Programs Administration (RSPA). RSPA furnishes airport activity data on certificated route air carriers; FAA organizes/publishes it. Included in the data are passenger enplanements, tons of enplaned freight, express and mail. Both scheduled/nonscheduled service and domestic/international operations shown by airport and carrier are also included. Breakdown of data includes departures/enplanements/cargo/mail by airport, carrier & type of operation, and type of aircraft.

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Person to contact:	Patricia Beardsley
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Census of U.S. Civil Aircraft is an annual publication that includes statistical data on the registered civil fleet, air carrier aircraft, and general aviation aircraft--both registered and active, detailed reports for general aviation aircraft by owner's state and county, and registered aircraft by make and model.

Reporting period:	Calendar Year
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Person to contact:	Patricia Beardsley
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FAA Air Traffic Activity furnishes terminal and en route air traffic activity information (e.g., takeoffs & landings, flight plans filed) of the National Airspace System. The data is collected/compiled from the FAA-operated Airport Traffic Control Towers, Air Route Traffic Control Centers, Flight Service Stations, Approach Control Facilities, and FAA Contract-towered airports.

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Person to contact: Nancy Trembley

FAA Directory is published twice a year, it contains six sections of data: Washington/Region/Center headquarters' managers; field facilities' managers/supervisors; regional area maps/organizational charts; alphabetical listing; special interest groups; and glossary.

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Order from: U.S. Government Printing Office

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Person to contact: Alfredia Brooks

FAA Statistical Handbook of Aviation is a convenient source for historical data. It presents statistical information pertaining to the Federal Aviation Administration, the National Airspace System, Airports, Airport Activity, U.S. Civil Air Carrier Fleet, U.S. Civil Air Carrier Operating Data, Airmen, General Aviation Aircraft, Aircraft Accidents, Aeronautical Production & Import/Export.

Reporting period: Calendar Year  
Latest edition: 1989 data  
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Person to contact: Patricia Beardsley

General Aviation Activity and Avionics Survey is an annual report that presents the results of the general aviation activity and avionics survey conducted to obtain information on the activity and avionics of the U.S. registered general aviation aircraft fleet. The report contains estimated flying time, landings, fuel consumption, lifetime airframe hours, avionics, and engine hours of the active general aviation aircraft by manufacturer/model group, aircraft type, state and region of based aircraft, and primary use. .

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U.S. Civil Airmen Statistics is an annual study of detailed airmen statistics. It contains calendar year statistics on pilot and nonpilots and the number of certificates issued.

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## PREFACE

This report presents the results of the 1989 General Aviation Activity and Avionics (GAAA) Survey. It is prepared by the Statistical Analysis Branch, Management Standards and Statistics Division, Office of Management Systems (AMS-420).

The report is divided into nine, easy-to-read chapters. Each chapter contains its corresponding tables and figures, which follow each chapter's text. The figures are presented first, with the tables following the figures. This year's report includes an additional chapter, Chapter IX, 1989 Rotorcraft Activity Survey Findings.

The 1989 Rotorcraft Activity Survey is the first ever census of the rotorcraft population conducted by the Federal Aviation Administration (FAA). In order not to duplicate information from the 1989 Rotorcraft Activity Survey in this year's GAAA Survey, the GAAA Survey's chapters only contain rotorcraft data on the population of the rotorcraft fleet, the number of active/inactive rotorcraft and the total hours. Only tables in chapters II, III, and VI contain data on the rotorcraft population. One should use caution when comparing this year's 1989 GAAA survey findings with previous years' GAAA survey findings. A complete analysis of the 1989 rotorcraft fleet is presented in Chapter IX. A separate report on the 1989 Rotorcraft Activity Survey is available from the Management Systems, Management Standards and Statistics Division.

The outline of this report is as follows:

Chapter I, **Introduction**, briefly discusses the purpose, background and scope of the General Aviation Activity and Avionics Survey Report. It also highlights the important findings of the survey.

Chapter II, **Common General Aviation Activity Measures**, presents information on the general aviation population size, the number of active aircraft, total hours flown and average hours flown. Statistics on another measurement of general aviation activity, number of landings, are also given by total, local flight and cross-country flight.

Chapter III, **Primary Use**, looks at the growth in the number of active aircraft and in the total number of hours flown by the general aviation fleet. The major uses of the general aviation aircraft and the number of nautical miles flown by primary use are also looked at in detail.

Chapter IV, **Flying Conditions**, presents statistics on the conditions under which the general aviation population flies. Detailed statistics on the number of hours flown under Visual Meteorological Conditions (VMC) and Instrument Meteorological Conditions (IMC) during day and night are given. Rotorcraft data are excluded from this chapter.

Chapter V, **Fuel Consumption**, gives information on the types of fuel consumed, the amount used, and average fuel consumption by the general aviation fleet. Rotorcraft data are excluded from this chapter.

Chapter VI, **Airframe Hours and Engine Activity**, provides data on the age of the general aviation fleet--average airframe hours per active aircraft and the number of engines and average hours per engine.

Chapter VII, **Avionics**, presents various figures and tables on selected capabilities of the general aviation aircraft fleet. Rotorcraft data are excluded from this chapter.

Chapter VIII, **National Airspace System (NAS) Capability Groups Based on Avionics**, provides numerous figures and tables on aircraft avionic capabilities by the two classifications of capability groups, hierarchical and non-hierarchical. These two groups were developed to provide a framework for relating airborne avionics equipment (discussed in Chapter VII, Avionics) to aircraft capability to perform in the NAS. Rotorcraft data are excluded from this chapter.

Chapter IX, **1989 Rotorcraft Activity Survey Findings**, introduces the reader to the common rotorcraft activity measurement statistics: the rotorcraft population size, the number of active aircraft, total hours flown, and average hours flown. Statistics on the number of landings by State, by rotorcraft type, by landing facility and by use are provided, as well as data on the age of the rotorcraft fleet (i.e., average airframe hours per active aircraft).

Appendix A, **Methodology for the 1989 General Aviation Activity and Avionics Survey**, provides a detailed description of the GAAA Survey, its history, and the survey sample design. Also included are a definition and explanation of "standard error," a statistical measure reported in each table.

Appendix B, **Methodology for the 1989 Rotorcraft Activity Survey**, details the methodology used for the 1989 Rotorcraft Survey. Appendix C and Appendix D list SDR aircraft group name and FAA Manufacturer/Model Codes, and Service Difficulty Reporting (SDR) Engine Group Name and FAA Manufacturer/Model Codes, respectively. Appendix E contains a list of common acronyms, as well as a glossary of aviation terms found in this report. Appendix F lists definitions of rotorcraft expanded use categories.

Suggestions and comments about this report are welcome and will be given careful consideration in planning future editions.

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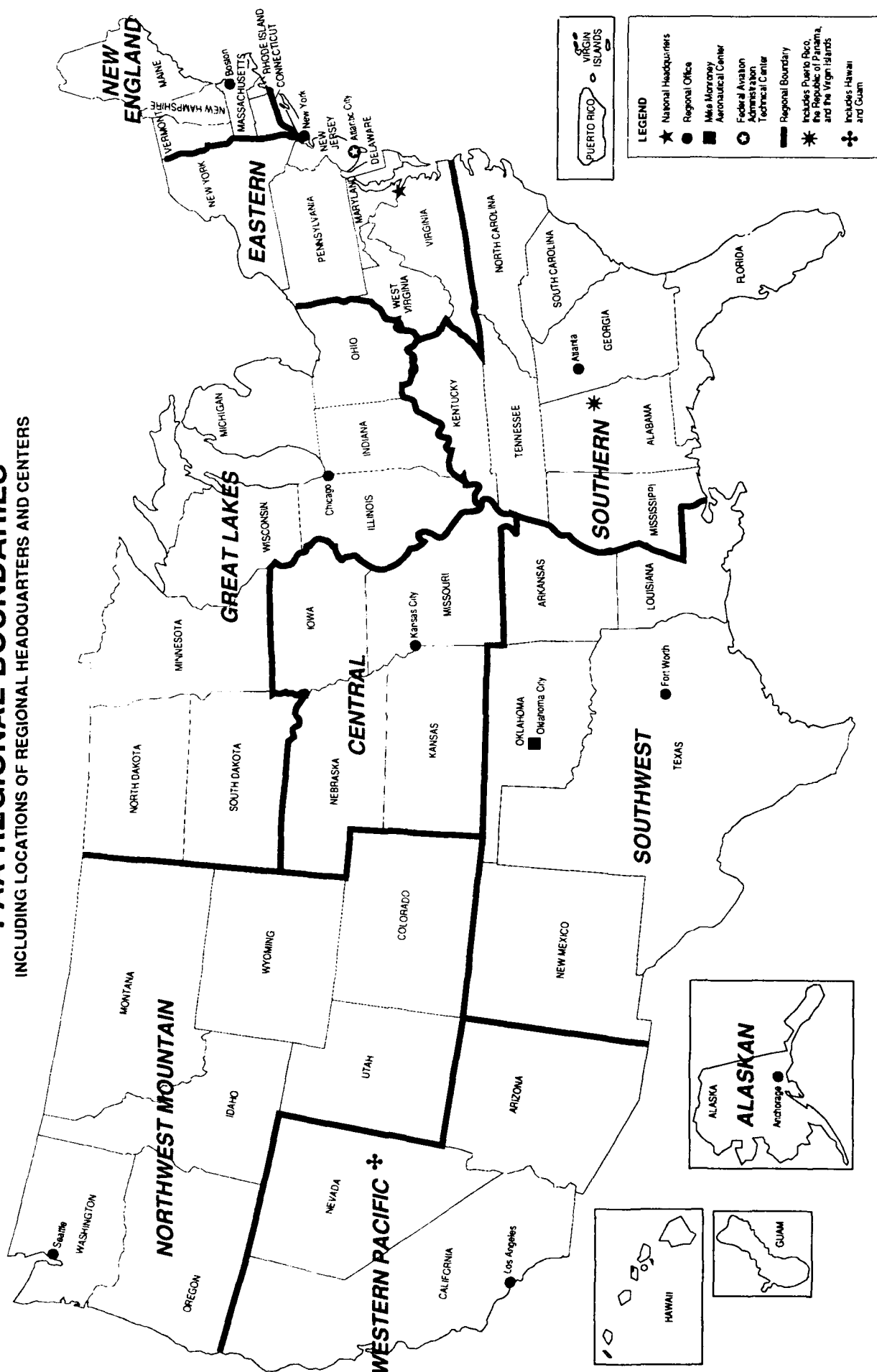
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U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

# FAA REGIONAL BOUNDARIES

INCLUDING LOCATIONS OF REGIONAL HEADQUARTERS AND CENTERS





## CHAPTER I

### INTRODUCTION

This report presents the results of the annual General Aviation Activity and Avionics (GAAA) Survey and, for the first time, the results of the 1989 Rotorcraft Activity Survey. The GAAA Survey provides information about the activities and avionics equipment of the general aviation aircraft fleet. The 1989 Rotorcraft Activity Survey, the first ever census of the rotorcraft fleet, provides the FAA with information about the characteristics and activities of the rotorcraft fleet.

The information obtained from both surveys enables the FAA to monitor the general aviation fleet so that FAA can, among other activities, anticipate and meet demand for National Airspace System (NAS) facilities and services, assess the impact of regulatory changes on the general aviation fleet, and implement measures to assure the safe operation of all aircraft in the airspace.

In order not to duplicate information from the 1989 Rotorcraft Activity Survey in this year's GAAA Survey, the GAAA Survey's chapters only contain rotorcraft data on the population of the rotorcraft fleet, the number of active/inactive rotorcraft and the total hours. Only tables in chapters II, III, and VI contain data on the rotorcraft population. One should use caution when comparing this year's 1989 GAAA survey findings with previous years' GAAA survey findings. A complete analysis of the 1989 rotorcraft fleet is presented in Chapter IX. A separate report on the 1989 Rotorcraft Activity Survey is available from the Management Systems, Management Standards and Statistics Division.

The term "general aviation" is not always defined in the same way from aviation publication to aviation publication. For the purposes of the GAAA Survey, the term "general aviation" excludes what is commonly known as the "airlines." The general aviation aircraft represented in this report, then, range in complexity from simple gliders and balloons to the more sophisticated four engine turbojets. These aircraft are used for a variety of purposes such as air taxi, agricultural, business, personal, research, instructional, recreational, and even sport fishing--to name a few.

Each year, the information for the GAAA Survey is collected using a statistically designed sample survey. The sampled aircraft represent every state and FAA region and all of the major manufacturer/model groups of aircraft. Appendix A of this report provides a detailed description of the GAAA Survey, its history, and the survey sample design.

Following are some of the significant GAAA Survey findings for 1989:

#### GENERAL:

- o The estimated 219,737 active general aviation aircraft in the fleet flew more than 35 million hours in 1989, with an average annual flight time per aircraft close to 155 hours. These active aircraft

represent approximately 82 percent of the registered general aviation fleet.

- o From 1988 to 1989, the number of active aircraft in the general aviation fleet increased 5 percent, and flying time increased 4 percent. The average hours flown per aircraft increased approximately 5.9 percent over 1988's comparable figures.
- o The general aviation active aircraft (excluding rotorcraft) undertook more than 45 million operations (takeoffs and landings). About 62 percent were in local flight (versus cross country).
- o The general aviation aircraft fleet flew almost 4.5 billion nautical miles during 1989.
- o Approximately 75 percent of the total hours were flown in visual meteorological conditions (VMC) during the day, and 12 percent VMC during the night. Nine percent of the total hours were flown under instrument meteorological conditions (IMC) during the day, while IMC flight during the night accounted for only 4 percent of the total hours flown.
- o An estimated 1.03 billion gallons of fuel were consumed by the active general aviation fleet (excluding rotorcraft) during 1989. Approximately 33 percent of the total fuel consumed during 1989 was aviation gasoline, and 67 percent was jet fuel.
- o Almost 41 percent of the active general aviation fleet flew by instrument flight rules (IFR) during 1989.

#### GEOGRAPHIC:

- o The three regions with the greatest number of active aircraft are the Great Lakes region, with 17.9 percent; the Western-Pacific region, with 17.1 percent; and the Southern region, with 16.8 percent. The region with smallest number of active aircraft is the Alaskan Region, comprising only 3 percent of the active general aviation fleet.
- o States represented by the largest number of registered general aviation aircraft include California with 14 percent, Texas with 8 percent, and Florida with 6 percent.

#### AIRCRAFT TYPE AND PRIMARY USE:

- o Turboprop, turbojet and rotorcraft aircraft types averaged 471, 375, and 390 flight hours per aircraft, respectively. In contrast, active fixed wing piston aircraft, which make up more than 88 percent of the active fleet and represent 77 percent of the total flight time, averaged only 138 flight hours per aircraft.

- o Twin engine turboprops with 13 or more seats had the most average hours flown per aircraft, 1,044. The aircraft types with the least number of average hours flown were the single engine piston with 4 or more seats, averaging 131 hours, and aircraft types in the "other" category (e.g., gliders and balloons), which accounted for 56 average hours flown per aircraft.
- o The most popular primary use category of the active general aviation aircraft is personal use, with more than 56 percent of the active fleet falling into this category. The next closest primary use category is business, with 17 percent, followed by instructional use with 8 percent.

AVIONICS:

- o The percent of the general aviation fleet with two-way VHF communication equipment and transponder equipment is 85 and 71 percent, respectively.
- o More than half of the general aviation fleet, approximately 57 percent, have at least one component of an instrument landing system, such as a localizer, marker beacon, or glide slope.
- o Approximately 80 percent of the general aviation aircraft have some form of navigation equipment, such as VOR navigation equipment, long range navigation equipment or some other type of navigation equipment.
- o The percent of the general aviation fleet with guidance and control equipment was 33 percent in 1989.

## CHAPTER II

### COMMON GENERAL AVIATION ACTIVITY MEASURES

Several aviation activity measures are used to indicate growth trends and activity levels in the general aviation fleet. Some common aviation activity measures of interest are the size of the general aviation population, the number of active aircraft, the total flight hours, average flight hours per aircraft, and number of landings.

This chapter presents seven tables and three figures on these common aviation activity measures. The first four tables, Tables 2.1-2.4, give estimates of the general aviation population size, number of active aircraft, total flight hours and average flight hours in four different ways, by: 1) Aircraft Type, 2) Service Difficulty Reporting (SDR) Aircraft Manufacturer/Model Group, 3) Region of Based Aircraft, and 4) State of Based Aircraft.

Table 2.2 breaks down the number of estimated active aircraft and their respective average hours flown figures by Service Difficulty Reporting (SDR) aircraft manufacturer/model group. Appendix C lists these SDR aircraft group names and FAA manufacturer/model codes. The 13 "Other" categories listed in the beginning of Table 2.2 refer to all the general aviation aircraft which belong to a manufacturer/model group which has fewer than 20 aircraft. The different "other" categories stand for:

- 1 Fixed Wing Piston, 1 Engine, 1-3 Seats.
- 2 Fixed Wing Piston, 1 Engine, 4+ Seats.
- 3 Fixed Wing Piston, 2 Engine, 1-6 Seats.
- 4 Fixed Wing Piston, 2 Engine, 7+ Seats.
- 5 Fixed Wing Piston, Other.
- 6 Fixed Wing Turboprop, 2 Engines, 1-12 Seats.
- 7 Fixed Wing Turboprop, 2 Engines, 13+ Seats.
- 8 Fixed Wing Turboprop, Other.
- 9 Fixed Wing Turbojet, 2 Engines.
- 10 Fixed Wing Turbojet, Other.
- 11 Rotorcraft, Piston.
- 12 Rotorcraft, Turbine.
- 13 Other Aircraft.

Tables 2.5-2.7 contain data on the number of aircraft landings by the general aviation population. Estimates of the total number of landings, the number of landings in local flight and the number of landings in cross country flight by aircraft type and by region of based aircraft are given.

To visualize the data presented in Tables 2.1-2.7, three figures are included. Figures 2.1, 2.2 and 2.3 show, by aircraft type, the number of general aviation active aircraft, total flight hours, and number of landings, respectively.

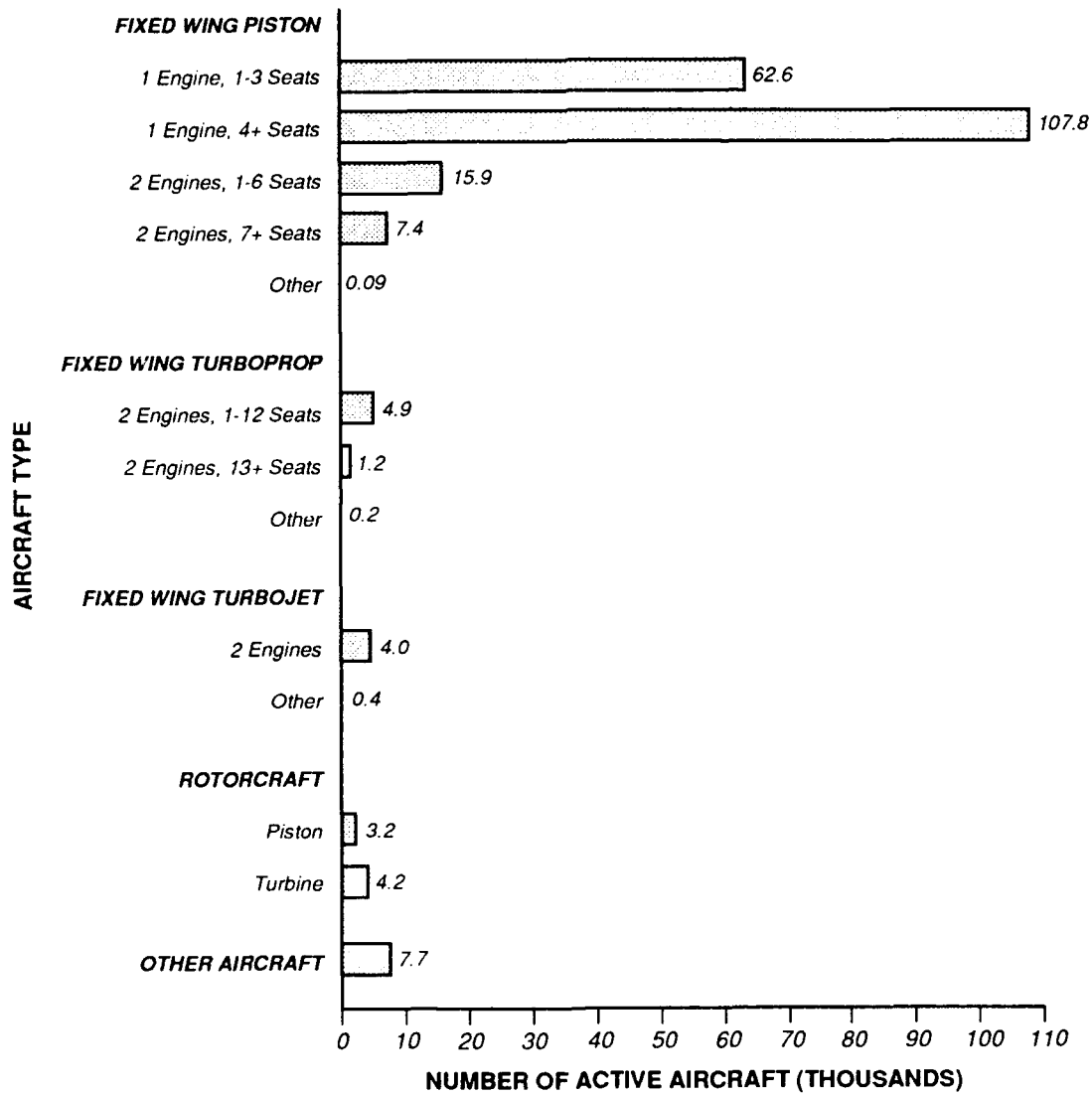
Some observations derived from these tables are:

- o Among all types of general aviation aircraft, there was a great deal of variation in the total hours, number of active aircraft, and average hours.
- o On a national level, the results of the 1989 General Aviation Activity and Avionics survey revealed that more than 35 million hours were flown by the 219,737 active general aviation aircraft in the U.S. fleet in 1989.
- o The average flight time per active aircraft in the general aviation fleet was 155 hours, and the active aircraft comprised about 82 percent of the registered general aviation fleet.
- o The statistics for 1989 showed a five percent increase in the number of active aircraft in the general aviation fleet, a four percent increase in flying time, and a six-tenths of one percent increase in the average hours flown per aircraft over 1988's comparable figures.
- o Single engine piston aircraft, with more than 200,000 registered, dominated the active fleet and contributed the largest portion of total flying time, even though these aircraft had the lowest average flight time per aircraft (131 hours). In contrast, the turboprop, turbojet and rotorcraft, with smaller representations in the active fleet, contributed a relatively high proportion of flight time with higher average hours flown of 471, 375, and 390 hours, respectively.
- o Fixed wing turboprops with 13 or more seats averaged the most hours per aircraft, with 1,044 average hours. This is attributable to their heavy commercial use as commuter air carriers and air taxis. The rotorcraft and turbojet aircraft also had a relatively greater average number of hours per aircraft than other types, with 390 and 375 hours, respectively. All three of these aircraft types, though, have some of the lowest representations in the active fleet.
- o The aircraft with the largest representation in the active fleet is the fixed wing, one engine piston with four or more seats. This group has an estimated active number of more than 107,000 aircraft, logging in an average of 131 hours per aircraft.
- o The percentages of active aircraft in each region versus the total number of registered aircraft in each region are relatively close together, ranging from 76 percent to 86 percent.
- o The three regions with the greatest number of active aircraft are: the Great Lakes with 39,383; the Western-Pacific with 37,749; and the Southern with 36,875.
- o The total active aircraft flight time increased almost 5 percent for 1989 over 1988's hours. In five regions, flight time increased over 1988 estimates, increases ranging from 2 percent in the Great Lakes

region to 12 percent in the Southwestern region. The New England, Alaskan, Eastern, and Central regions showed decreases of 0.1, 4, 5, and 10 percent, respectively. The Southern region accounted for the most flight time, with the Western-Pacific, Southwestern and Great Lakes regions close behind.

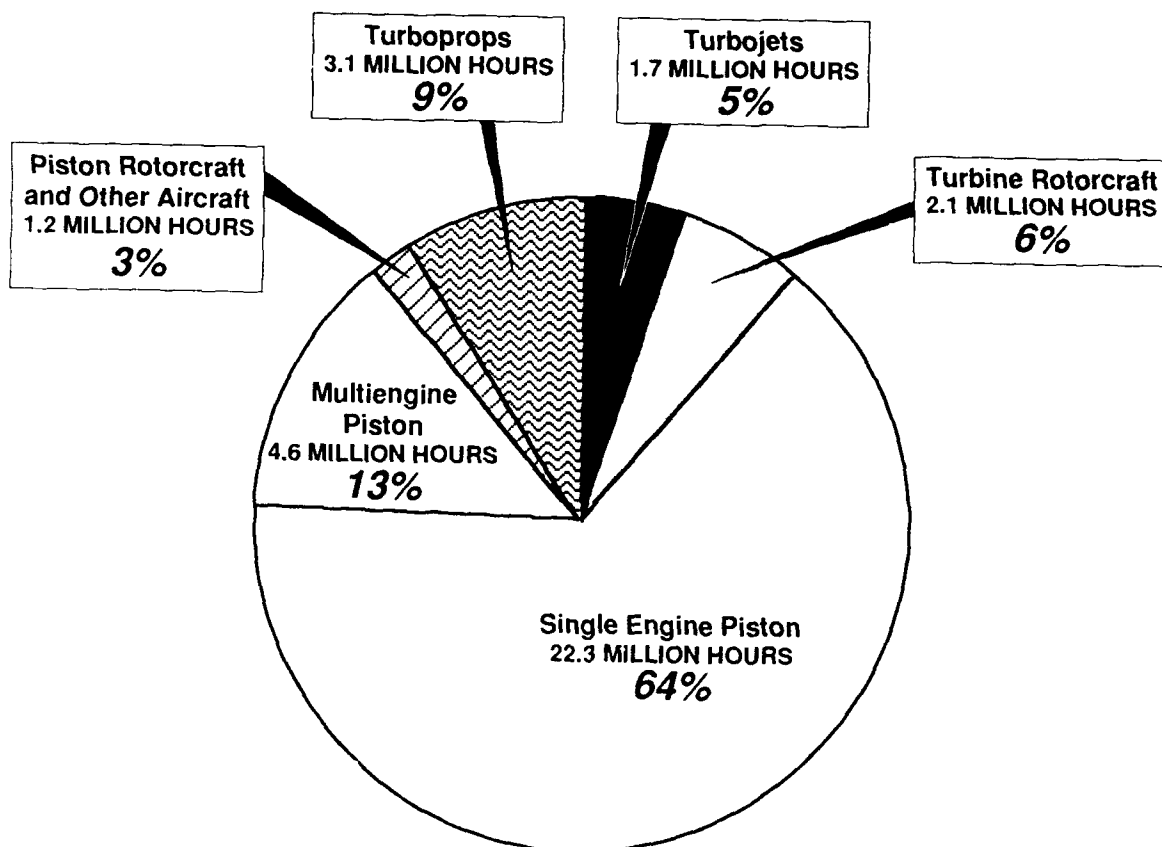
- o The state with the largest estimated number of active aircraft is California with 29,757 active aircraft. The next two states are Texas with 18,321, and Florida with 13,599, active aircraft.
- o The state with the highest estimated average flight hours, 544.6, is Hawaii. Vermont has the lowest average flight hours, 103.0.
- o During 1989, the general aviation fleet (excluding rotorcraft) made almost 45 million landings. This represents a decrease of 4.5 percent, or approximately 1.9 million landings, from last year's figures.
- o Single engine piston aircraft made the most landings, 34.1 million, with the majority of the landings in local, rather than cross country flight.
- o Turboprops and turbojets, which are used primarily for long, cross country flying, had a greater number of cross country landings versus local landings than any other aircraft types.

**Figure 2.1**  
**1989 GENERAL AVIATION ACTIVE AIRCRAFT**  
**BY AIRCRAFT TYPE**



**SOURCE:** Table 2.1

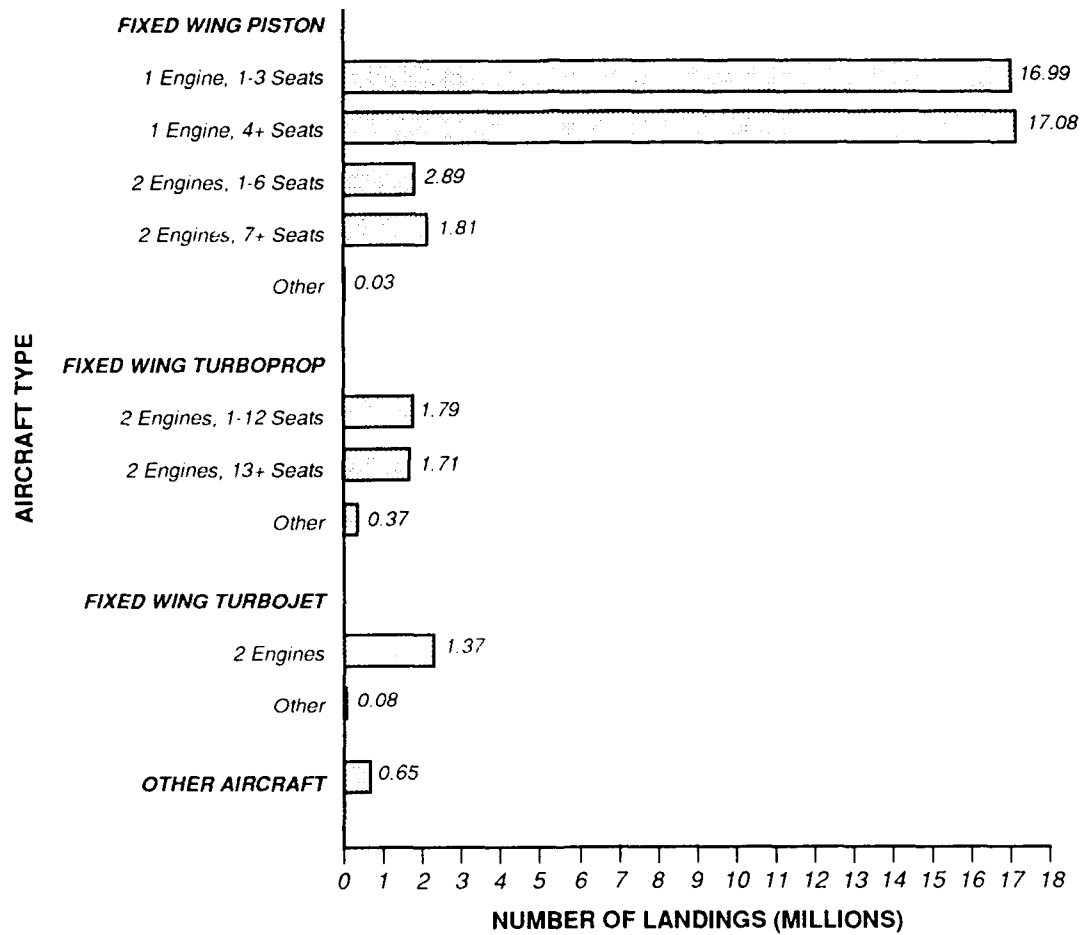
**Figure 2.2**  
**1989 GENERAL AVIATION TOTAL FLIGHT HOURS**  
**BY AIRCRAFT TYPE**



**SOURCE:** Table 2.1



**Figure 2.3**  
**1989 GENERAL AVIATION LANDINGS**  
**BY AIRCRAFT TYPE**



**NOTE:** Data on landings by Rotorcraft were not collected in 1989.

**SOURCE:** Table 2.5

2.1 1989 GENERAL AVIATION POPULATION SIZE, ACTIVE AIRCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY AIRCRAFT TYPE

PAGE 1 OF 2

AIRCRAFT TYPE	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
FIXED WING									
FIXED WING - PISTON									
1 ENG: 1-3 SEATS	87,836	62,618	1.2	71.3	0.9	8,312,021	3.9	132.3	3.8
1 ENG: 4+ SEATS	120,246	107,752	0.6	89.6	0.5	13,994,857	2.7	130.5	2.6
1 ENGINE: TOTAL	208,082	170,370	0.6	81.9	0.5	22,306,870	2.2	131.2	2.2
2 ENG: 1-6 SEATS	17,838	15,927	1.5	89.3	1.3	2,717,639	4.1	169.3	4.0
2 ENG: 7+ SEATS	8,690	7,432	1.9	85.5	1.6	1,930,388	5.3	259.1	4.8
2 ENGINE: TOTAL	26,528	23,359	1.2	88.1	1.0	4,648,026	3.3	195.1	3.1
PISTON: OTHER	194	86	33.7	44.3	14.9	16,575	67.3	133.4	24.9
PISTON: TOTAL	234,804	193,815	0.5	82.5	0.4	26,971,478	1.9	137.9	1.9
FIXED WING - TURBOPROP									
2 ENG: 1-12 SEATS	5,082	4,888	1.4	96.2	1.4	1,691,517	5.1	341.1	4.3
2 ENG: 13+ SEATS	1,442	1,206	5.0	83.6	4.2	1,314,165	9.8	1044.4	9.1
2 ENGINE: TOTAL	6,524	6,093	1.5	93.4	1.4	3,005,682	5.2	467.4	4.4
TURBOPROP: OTHER	352	230	14.3	65.3	9.4	126,279	16.6	568.9	13.7
TURBOPROP: TOTAL	6,876	6,324	1.5	92.0	1.4	3,131,961	5.0	471.3	4.3

2.1 1989 GENERAL AVIATION POPULATION SIZE, ACTIVE AIRCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY AIRCRAFT TYPE

PAGE 2 OF 2

AIRCRAFT TYPE	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
FIXED WING - TURBOJET									
2 ENGINE: TOTAL	4,209	4,004	1.4	95.1	1.3	1,542,156	3.9	384.9	3.6
TURBOJET: OTHER	527	398	8.3	75.5	6.3	111,940	12.2	274.7	11.5
TURBOJET: TOTAL	4,736	4,402	1.5	92.9	1.4	1,654,096	3.7	375.1	3.4
FIXED WING: TOTAL	246,416	204,540	0.5	83.0	0.4	31,757,536	1.7	150.1	1.7
ROTORCRAFT									
PISTON	5,784	3,244	1.2	56.1	0.7	748,773	2.1	235.8	1.9
TURBINE	4,685	4,232	0.4	90.3	0.4	2,079,847	0.9	496.6	0.8
ROTORCRAFT: TOTAL	10,469	7,475	0.6	71.4	0.4	2,828,620	0.9	390.2	0.8
OTHER	10,306	7,721	2.4	74.9	1.8	428,680	7.4	55.6	7.5
TOTAL	267,191	219,737	0.5	82.2	0.4	35,014,828	1.6	154.5	1.6

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

2.2 1989 GENERAL AVIATION POPULATION SIZE, ACTIVE AIRCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY SDR AIRCRAFT MANUFACTURER/MODEL GROUP

PAGE 1 OF 18

MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
OTHER 1	17,615	10,580	4.5	60.1	2.7	670,031	11.5	63.3	10.6
OTHER 2	1,866	1,415	7.4	75.8	5.6	178,036	20.0	125.9	18.6
OTHER 3	304	166	40.6	54.5	22.1	36,267	56.2	218.9	38.9
OTHER 4	252	237	14.7	94.0	13.8	29,458	45.9	124.4	43.5
OTHER 5	114	30	92.4	26.7	24.6	10,579	103.9	348.0	47.7
OTHER 6	413	364	8.5	88.2	7.5	270,026	23.3	741.4	21.8
OTHER 7	319	293	15.1	91.7	13.9	409,061	24.4	1,398.1	19.1
OTHER 8	150	57	56.9	37.8	21.5	18,915	64.8	333.6	31.0
OTHER 9	394	366	6.4	92.9	6.0	125,109	13.7	341.9	12.1
OTHER 10	258	185	16.1	71.8	11.6	39,024	30.6	210.8	26.0
OTHER 11	1,916	653	3.5	34.1	1.2	30,549	9.7	46.8	9.0
OTHER 12	255	202	2.7	79.3	2.1	107,276	6.8	530.2	6.2
OTHER 13	3,438	2,549	4.9	74.1	3.6	143,508	18.6	56.3	18.0
ADAMS A50S	136	112	9.1	82.6	7.5	2,440	21.3	21.7	19.3
AERORSJ2	38	20	13.3	51.7	6.9	576	21.5	29.3	16.9
AEROSFAS355	109	108	0.6	99.0	0.6	58,868	2.9	545.6	2.9
AEROSFSA316	91	61	6.4	67.4	4.3	27,516	10.0	448.9	7.7
AGUSTA205	32	30	3.4	95.0	3.2	11,856	9.9	390.0	9.3
AGUSTAA109	66	66	0.0	100.0	0.0	15,372	8.7	232.9	8.7
AIRPTSA	213	131	17.4	61.4	10.7	21,316	55.8	163.1	53.0
AIRSPC18	23	15	14.9	64.3	9.6	939	40.0	63.5	37.1

2.2 1989 GENERAL AVIATION POPULATION SIZE, ACTIVE AIRCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY SDR AIRCRAFT MANUFACTURER/MODEL GROUP

PAGE 2 OF 18

MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
AIRTRCAT300	436	403	5.9	92.4	5.4	145,200	9.3	360.2	7.2
AIRTRCAT400	60	60	0.0	100.0	0.0	22,410	19.6	373.5	19.6
AIRTRCAT500	38	37	6.5	96.9	6.3	18,349	13.1	498.4	11.3
AMD FALC10	125	121	4.5	96.9	4.3	47,088	10.7	388.6	9.7
AMD FALC20	188	182	4.1	97.1	4.0	72,151	10.5	395.4	9.6
AMD FALC50	123	102	11.6	82.9	9.6	42,334	14.6	415.4	8.9
AMTR TMK	22	14	30.9	62.5	19.3	193	42.9	14.0	29.7
ARCRNEH37	45	0	0.0	0.0	0.0	0	0.0	0.0	0.0
ARCTICS1A	89	49	17.3	55.4	9.6	2,275	25.4	46.1	18.5
ARCTICS1B1	23	14	14.9	60.0	8.9	611	29.0	44.2	24.8
ARONCA15	202	135	9.3	66.6	6.2	9,236	18.5	68.7	16.0
ARONCA58	150	60	18.7	40.3	7.5	2,646	27.6	43.8	20.3
ARONCA65	147	97	18.7	65.7	12.3	3,864	46.5	40.0	42.6
ARONCAC3	58	13	28.2	22.8	6.4	190	31.7	14.4	14.5
AVIANWFALCON	27	5	141.8	20.0	28.4	84	141.8	15.5	4.1
AVIANWSKYHWK	46	37	12.3	80.7	9.9	1,464	23.7	39.4	20.3
AYRES S2	824	757	6.5	91.9	6.0	349,152	11.2	467.1	9.4
BAG B206	24	14	39.4	60.0	23.7	826	56.6	57.3	40.6
BAG DH125	73	73	0.0	100.0	0.0	28,355	11.0	388.4	11.0
BALWKSIFREPY	1,732	1,421	6.3	82.1	5.2	49,818	14.4	35.1	12.9
BBAVIA11	826	542	12.6	65.7	8.3	22,518	22.7	41.5	18.9

2.2 1989 GENERAL AVIATION POPULATION SIZE, ACTIVE AIRCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY SDR AIRCRAFT MANUFACTURER/MODEL GROUP

PAGE 3 OF 18

MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
BBAVIA7	3,526	2,131	8.3	60.4	5.0	122,532	14.8	57.5	12.2
BBAVIA8	220	178	9.1	80.9	7.4	25,822	29.6	145.2	28.2
BEECH 100	229	229	0.0	100.0	0.0	61,758	11.6	269.7	11.6
BEECH 17	208	88	16.3	42.5	6.9	4,374	20.5	49.5	12.4
BEECH 18	803	478	16.7	59.5	10.0	188,062	25.4	388.2	19.4
BEECH 1900	106	106	0.0	100.0	0.0	161,410	28.4	1,522.7	28.4
BEECH 200	809	809	0.0	100.0	0.0	329,301	8.0	407.0	8.0
BEECH 23	2,708	2,583	2.2	95.4	2.1	331,931	14.7	128.5	14.6
BEECH 300	163	163	0.0	100.0	0.0	63,977	6.2	392.5	6.2
BEECH 33	1,961	1,928	1.2	98.3	1.2	261,762	10.3	135.8	10.3
BEECH 35	6,785	6,300	2.2	92.9	2.1	606,723	7.2	96.3	6.9
BEECH 36	2,363	2,288	2.0	96.8	2.0	307,424	8.1	134.3	7.8
BEECH 45	303	230	8.1	76.0	6.1	27,970	15.2	121.4	12.9
BEECH 50	326	142	41.6	43.6	18.1	15,444	48.4	108.8	24.6
BEECH 55	2,191	2,024	3.7	92.4	3.4	284,419	14.3	140.6	13.8
BEECH 56	58	52	5.3	89.8	4.8	6,850	32.3	131.5	31.8
BEECH 58	1,529	1,496	2.2	97.8	2.1	437,842	11.8	292.7	11.6
BEECH 60	414	377	10.3	91.0	9.3	55,238	19.6	146.6	16.7
BEECH 65	123	85	32.5	69.5	22.6	33,390	44.6	390.7	30.6
BEECH 76	280	277	1.7	98.9	1.7	53,391	14.1	192.7	14.0
BEECH 77	235	232	2.1	98.6	2.1	68,840	13.7	297.0	13.5

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BEECH 80	153	142	10.9	92.7	10.1	24,945	69.1	175.9	68.3
BEECH 90	1,093	997	5.5	91.2	5.0	323,685	9.3	324.6	7.5
BEECH 95	454	436	3.5	96.1	3.4	42,051	13.5	96.4	13.1
BEECH 99	135	100	20.8	73.9	15.4	85,913	40.6	861.2	34.9
BELL 204	26	22	5.2	84.3	4.4	5,621	8.4	256.6	6.6
BELL 206	1,900	1,810	0.3	95.3	0.3	979,907	1.0	541.5	1.0
BELL 212	117	106	3.1	90.2	2.8	56,155	6.2	532.1	5.4
BELL 222	83	70	2.5	84.3	2.1	26,601	4.5	380.3	3.7
BELL 412	61	61	0.0	100.0	0.0	41,651	5.8	682.8	5.8
BELL 47	838	579	2.3	69.1	1.6	155,156	5.3	267.8	4.8
BLANCA11	80	50	7.5	62.7	4.7	2,369	13.2	47.2	10.8
BLANCA1413	263	105	14.6	39.8	5.8	6,504	22.4	62.2	17.0
BLANCA1419	269	204	13.5	75.8	10.2	9,692	31.6	47.5	28.6
BLANCA17	1,013	954	3.4	94.2	3.2	76,989	11.5	80.7	11.0
BLANCA7	2,326	1,864	4.4	80.1	3.5	166,158	17.6	89.7	17.1
BLANCA8	464	403	8.5	86.9	7.4	23,814	17.7	59.1	15.6
BNORM BN2	94	52	19.9	55.6	11.0	34,958	24.3	669.4	13.9
BOEING727	22	22	0.0	100.0	0.0	7,392	0.0	336.0	0.0
BOEING75	1,922	845	11.8	44.0	5.2	46,228	18.7	54.7	14.6
BOLKMS105	175	171	1.9	97.7	1.9	107,506	6.1	628.6	5.8
BOLKMS117	113	110	2.9	97.2	2.8	54,321	7.2	494.5	6.6

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MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
BRAERODH125	115	115	0.0	100.0	0.0	41,140	10.4	357.7	10.4
BRASOVIS28	51	46	6.1	89.8	5.4	3,221	16.4	70.3	15.2
BRWSTRFLEET2	28	10	30.7	35.7	11.0	154	34.5	15.4	15.6
BRWSTRFLEET7	21	9	25.9	43.7	11.3	235	42.9	25.6	34.2
BUKER 131	30	18	23.3	60.0	14.0	1,123	36.5	62.4	28.1
CAMRONMODELO	30	30	0.0	100.0	0.0	1,690	8.3	56.3	8.3
CAMRONMODELO	239	184	9.9	77.1	7.6	5,213	22.8	28.3	20.5
CASA C212	40	33	18.1	83.3	15.0	13,313	25.1	399.4	17.4
CESSNA120	857	668	10.0	77.9	7.8	43,279	18.7	64.8	15.8
CESSNA140	2,357	1,637	6.8	69.4	4.8	111,735	12.0	68.3	9.9
CESSNA150	18,589	15,697	2.4	84.4	2.0	3,389,829	7.9	215.9	7.5
CESSNA170	2,479	1,948	6.8	78.6	5.4	140,169	17.1	71.9	15.7
CESSNA172	24,568	23,060	1.1	93.9	1.1	3,742,472	5.9	162.3	5.7
CESSNA175	1,300	956	9.4	73.5	6.9	54,578	20.4	57.1	18.1
CESSNA177	2,809	2,686	2.5	95.6	2.4	240,221	10.8	89.4	10.5
CESSNA18C	2,760	2,490	3.8	90.2	3.4	219,416	10.7	88.1	10.1
CESSNA182	13,742	12,828	1.5	93.3	1.4	1,412,917	5.5	110.1	5.3
CESSNA185	1,580	1,321	5.3	83.6	4.5	204,928	14.3	155.2	13.2
CESSNA188	1,611	1,459	5.5	90.5	5.0	317,450	13.3	217.6	12.1
CESSNA190	85	63	7.4	74.1	5.5	4,157	14.8	66.0	12.9
CESSNA195	507	376	6.2	74.1	4.6	18,451	10.7	49.1	8.8



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CESSNA205	239	222	5.1	99.1	4.7	22,808	18.7	102.5	18.0
CESSNA206	2,681	2,387	4.5	89.1	4.0	416,651	12.2	174.5	11.4
CESSNA207	331	106	94.0	32.1	30.2	59,180	95.9	556.2	19.0
CESSNA208	105	101	11.3	95.8	10.8	71,275	36.2	739.4	35.4
CESSNA210	5,915	5,633	2.1	95.2	2.0	819,567	10.3	145.5	10.1
CESSNA303	156	156	0.0	100.0	0.0	59,444	24.6	381.1	24.6
CESSNA305	280	219	8.5	78.3	6.7	18,490	26.1	84.4	24.7
CESSNA310	3,063	2,717	4.5	88.7	3.9	390,751	11.1	143.8	10.2
CESSNA320	312	287	3.0	92.0	2.8	39,224	9.3	136.6	8.8
CESSNA335	43	43	0.0	100.0	0.0	6,586	17.2	153.2	17.2
CESSNA336	72	43	15.7	59.1	9.3	2,947	21.1	69.3	14.1
CESSNA337	1,118	1,021	3.8	91.4	3.5	89,847	12.2	88.0	11.5
CESSNA340	902	872	3.4	96.7	3.3	134,019	10.5	153.7	10.0
CESSNA401	220	214	5.0	97.3	4.9	39,629	30.6	185.2	30.2
CESSNA402	620	450	13.0	72.5	9.5	209,431	18.1	465.7	12.5
CESSNA404	126	121	10.2	96.1	9.8	49,227	21.0	406.5	18.3
CESSNA411	130	53	30.0	41.0	12.3	3,482	42.8	65.3	30.6
CESSNA414	759	748	2.0	98.5	2.0	180,227	9.8	238.4	9.6
CESSNA421	1,179	1,146	3.2	97.2	3.1	180,819	16.8	157.8	16.5
CESSNA425	182	182	0.0	100.0	0.0	47,188	15.6	259.3	15.6
CESSNA441	220	220	0.0	100.0	0.0	64,718	8.8	294.2	8.8

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CESSNA500	627	557	7.0	88.8	6.2	266,166	15.0	477.9	13.3
CESSNA501	258	258	0.0	100.0	0.0	75,700	12.7	293.4	12.7
CESSNA650	141	141	0.0	100.0	0.0	74,648	10.0	529.4	10.0
CESSNA750	68	19	29.8	27.8	8.3	559	38.6	29.5	24.5
CESSNAUC94	31	16	30.0	52.6	15.8	326	42.3	20.0	29.8
CHILD S1	57	55	6.1	97.2	5.9	4,258	17.4	76.8	16.2
CHILD S2	163	151	5.8	92.8	5.4	11,826	13.9	78.1	12.7
CHRIS HUSKY	54	49	5.2	91.2	4.7	4,920	17.0	99.9	16.2
CNDALRCL600	127	116	8.1	91.5	7.4	39,145	13.0	336.9	10.1
CNTRAR101	34	34	0.0	100.0	0.0	2,524	21.4	74.2	21.4
COMWTH185	109	47	18.4	42.8	7.9	1,612	37.4	34.5	32.6
CONAERLA4	456	421	4.7	92.3	4.3	35,127	13.6	83.5	12.8
CURTISJR	24	4	60.1	15.4	9.2	26	60.6	7.0	7.7
CURTISROBIN	32	4	70.9	12.5	8.9	30	73.4	7.5	19.1
CURTISTRVAIR	179	36	27.6	19.9	5.5	3,043	33.5	85.4	18.9
CVAC 240	43	3	157.6	8.1	12.7	616	163.6	177.5	44.0
CVAC 340	24	3	154.9	11.8	18.2	0	0.0	0.0	0.0
CVAC BT13	114	31	35.9	27.3	9.8	2,152	44.8	69.1	26.9
CVAC L13	20	3	57.4	14.2	8.1	55	58.7	19.3	12.3
CVAC STC580	66	39	31.1	59.0	18.4	18,381	38.1	472.2	22.0
CVAC STC600	26	0	0.0	0.0	0.0	0	0.0	0.0	0.0

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DART G	26	3	42.5	12.2	5.2	58	46.2	18.2	18.1
DHAV DHC1	104	66	19.5	63.2	12.3	3,894	34.4	59.3	28.3
DHAV DHC2	237	174	9.6	73.4	7.0	67,471	19.2	387.6	16.6
DHAV DHC3	40	38	12.9	94.4	12.2	12,808	18.6	339.0	13.4
DHAV DHC4	32	4	245.3	11.1	27.3	324	245.3	91.0	0.0
DHAV DHC6	97	94	3.9	96.5	3.7	96,844	13.4	1,034.7	12.9
DHAV DHC7	26	0	0.0	0.0	0.0	0	0.0	0.0	0.0
DHAV DHC8	25	25	0.0	100.0	0.0	6,938	9.9	277.5	9.9
DHAVXXDH82	81	51	22.2	63.5	14.1	1,313	41.0	25.5	34.6
DORNERDO228	32	32	0.0	100.0	0.0	55,920	25.6	1,747.5	25.6
DOUG A26	30	14	22.7	45.8	10.4	255	30.4	18.5	20.3
DOUG DC3	410	267	7.8	65.2	5.1	59,485	14.2	222.6	11.9
DOUG DC4	80	55	13.1	69.2	9.0	5,996	32.0	108.3	29.2
EAGLE DW	71	54	17.9	76.2	13.6	12,002	21.8	221.9	12.5
EAGLEBAX7	21	18	12.9	83.3	10.8	673	21.3	38.4	17.0
EAGLEBC7	77	65	7.4	84.2	6.2	2,096	14.2	32.3	12.1
EIRVON20	114	106	3.5	93.4	3.3	6,892	12.5	64.8	12.0
EMB 110	73	70	13.0	95.7	12.4	149,072	20.6	2,134.9	16.0
EMB 120	50	50	0.0	100.0	0.0	92,689	14.5	1,853.8	14.5
ENSTRMF28	421	330	2.2	78.5	1.7	61,181	9.8	185.1	9.6
FLEET 16B	24	13	27.0	53.8	14.5	519	32.0	40.1	17.1

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FOKKERF27	22	18	36.2	83.3	30.2	9,093	36.2	496.0	0.0
FRCHLD22	20	9	29.6	46.2	13.6	169	35.9	18.3	20.4
FRCHLD24	288	108	15.1	37.3	5.6	4,183	20.8	38.2	15.6
FRCHLDC119	29	0	0.0	0.0	0.0	0	0.0	0.0	0.0
FRCHLDF27	23	17	15.9	75.0	11.9	4,194	39.3	243.1	35.9
FRCHLDM62	224	111	14.5	49.8	7.2	4,119	23.9	37.0	19.0
GALAXYGX7	43	43	0.0	100.0	0.0	1,345	20.1	31.3	20.1
GENBALAX6	59	27	32.3	46.3	14.9	1,091	50.8	40.0	39.3
GLASER300	22	12	31.0	52.9	16.4	678	36.6	58.2	19.5
GLASER400	34	34	0.0	100.0	0.0	1,777	22.5	52.3	22.5
GLASFL201	34	29	6.8	84.7	5.8	1,160	13.0	40.2	11.0
GLASFLH301	111	80	10.5	72.5	7.6	3,369	22.2	41.9	19.6
GROB 103CAT	57	54	7.0	94.4	6.6	5,757	28.4	106.9	27.6
GROB 109	64	64	0.0	100.0	0.0	5,176	9.7	80.9	9.7
GROB ASTIR	59	51	7.0	86.2	6.1	3,023	17.5	59.5	16.0
GRTIKS2T1	184	107	19.0	57.9	11.0	4,263	30.4	40.0	23.7
GRUMANSAL6	59	22	47.6	37.3	17.8	2,780	61.3	153.4	28.2
GRUMAVAA1	555	460	8.6	82.9	7.1	41,858	20.4	91.0	18.5
GRUMAVAA5	1,040	975	4.0	93.8	3.8	91,346	12.4	93.7	11.8
GRUMAVG1159	35	26	18.1	74.2	13.4	8,397	21.5	323.3	11.7
GRUMAVG164	1,152	1,014	7.8	88.1	6.9	401,496	14.1	395.8	11.8

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GRUNAVG21	51	51	0.0	100.0	0.0	5,745	30.7	112.6	30.7
GRUNAVTBM	36	26	11.5	71.6	8.2	1,017	21.5	39.5	18.2
GULSTM112	651	544	7.3	83.6	6.1	42,164	13.1	77.5	10.8
GULSTM500	297	297	0.0	100.0	0.0	46,913	47.4	158.0	47.4
GULSTM520	47	34	23.7	71.4	16.9	2,763	36.5	82.3	27.7
GULSTM560	110	90	18.2	82.1	15.0	8,274	33.0	91.6	27.5
GULSTM680	295	268	11.4	91.0	10.4	64,127	31.6	238.9	29.5
GULSTM680TP	96	88	6.3	92.1	5.8	10,736	17.0	121.4	15.8
GULSTM690TC	25	25	0.0	100.0	0.0	7,534	9.3	301.4	9.3
GULSTM690TP	384	384	0.0	100.0	0.0	77,104	23.7	200.8	23.7
GULSTMAA1	580	474	9.2	81.7	7.5	33,411	22.2	70.5	20.2
GULSTMAA5	628	569	5.9	90.6	5.4	47,172	11.3	82.9	9.6
GULSTMG1159	253	220	9.1	87.0	7.9	72,425	15.5	329.1	12.6
GULSTMG159	102	71	16.5	70.1	11.6	29,453	21.7	412.1	14.0
GULSTMG44	90	76	8.7	84.7	7.4	8,491	30.8	111.4	29.6
GULSTMG73	30	11	47.1	35.7	16.8	4,421	67.3	413.3	48.1
GULSTMGA7	49	49	0.0	100.0	0.0	10,900	22.4	222.4	22.4
H23/HTE	36	12	22.9	32.1	7.3	2,302	48.5	199.2	42.8
H34/55	29	3	35.2	11.4	4.0	709	35.2	214.0	0.7
HELIO H295	98	85	7.4	86.4	6.4	12,097	18.3	142.8	16.7
HELIO H391	23	20	17.4	85.8	14.9	635	50.2	32.1	47.1

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HILLERH1100	64	29	20.7	45.2	9.4	3,871	34.7	133.7	27.8
HILLERUH12	585	373	3.0	63.8	1.9	78,181	5.9	210.1	5.2
HSPAVNHA200	25	19	23.4	75.0	17.6	411	33.6	21.9	24.1
HUGHES269	676	476	2.0	70.4	1.4	162,192	4.5	340.9	4.0
HUGHES369	600	551	1.0	91.8	0.9	245,743	3.5	446.3	3.3
HWKSLYDH104	33	17	46.9	50.0	23.4	1,031	50.4	62.5	18.6
HWKSLYDH125	182	182	0.0	100.0	0.0	69,340	13.6	381.0	13.6
HYNES B2	126	53	10.2	41.9	4.3	3,577	15.9	67.7	12.2
INTRCP200	32	27	12.9	83.3	10.8	2,171	40.9	81.4	38.8
ISRAEL1121	98	85	10.4	87.0	9.1	12,297	30.0	144.3	28.1
ISRAEL1123	22	22	0.0	100.0	0.0	3,732	16.1	169.6	16.1
ISRAEL1124	214	206	4.5	96.5	4.4	84,377	9.5	408.8	8.4
JBMSTRDGA15	85	45	15.5	52.4	8.1	2,877	25.3	64.6	20.1
LAIFEN10	37	0	0.0	0.0	0.0	0	0.0	0.0	0.0
LEAR 23	49	37	30.9	75.0	23.2	13,018	50.3	354.2	39.7
LEAR 24	166	166	0.0	100.0	0.0	46,829	14.8	282.1	14.8
LEAR 25	237	237	0.0	100.0	0.0	74,228	13.8	313.2	13.8
LEAR 35	410	410	0.0	100.0	0.0	206,682	12.6	504.1	12.6
LEAR 55	105	101	5.3	95.8	5.1	46,301	11.8	460.1	10.5
LET L13	155	130	7.1	83.9	6.0	14,284	22.6	109.8	21.4
LKHEED1329	78	77	3.1	98.3	3.1	23,002	9.7	300.1	9.2

2.2 1989 GENERAL AVIATION POPULATION SIZE, ACTIVE AIRCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
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MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
LKHEED18	61	54	21.0	88.9	18.6	1,152	27.4	21.3	17.7
LKHEEDP2V	26	26	0.0	100.0	0.0	234	7.4	9.0	7.4
LKHEEDPV1	35	0	0.0	0.0	0.0	0	0.0	0.0	0.0
LKHEEDT33	46	12	44.3	26.1	11.5	188	59.8	15.7	40.2
LUSCOM8	2,142	1,154	10.0	53.9	5.4	64,399	15.3	55.8	11.6
MACDOUG369	61	61	0.0	100.0	0.0	30,873	5.7	506.1	5.7
MARTIN404	30	2	180.4	7.7	13.9	231	180.4	100.0	0.0
MAULE M4	269	163	22.1	60.7	13.4	8,919	27.3	54.6	16.0
MAULE M5	440	293	22.0	66.6	14.6	40,453	42.8	138.0	36.7
MAULE M6	68	68	0.0	100.0	0.0	6,667	38.8	98.0	38.8
MCLISHFUNKB	148	64	15.9	43.5	6.9	2,416	23.8	37.5	17.7
MEYERSOTW	47	29	13.7	62.5	8.6	1,142	23.6	38.9	19.2
MILITARY204	201	142	6.3	70.8	4.5	17,028	12.1	119.6	10.3
MILITARY47	395	235	3.7	59.4	2.2	46,384	8.0	198.1	7.2
MNCUP90	65	16	19.3	24.9	4.8	378	21.2	23.4	8.8
MNMITEM18	138	61	13.9	44.3	6.1	1,707	20.0	27.9	14.5
MODFD47	53	37	10.8	70.4	7.6	11,898	20.3	319.0	17.2
MOONEYM20	6,433	5,709	3.0	88.7	2.7	577,619	6.6	101.2	5.8
MRCHTIS205	45	24	27.5	53.0	14.6	906	35.7	38.0	22.8
MTSBSIMU2	306	282	9.1	92.3	8.4	89,190	19.3	315.7	17.0
MTSBSIMU300	75	75	0.0	100.0	0.0	20,462	16.6	272.8	16.6

2.2 1989 GENERAL AVIATION POPULATION SIZE, ACTIVE AIRCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
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MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
MULTECD16	42	23	21.5	54.5	11.7	992	30.6	43.3	21.8
NAMER B25	50	12	63.1	25.0	15.8	550	71.7	44.0	34.1
NAMER F51	147	81	14.1	55.4	7.8	4,986	20.3	61.2	14.7
NAMER NA260	189	107	10.2	56.5	5.8	5,689	14.4	53.3	10.1
NAMER T6	577	475	6.9	82.3	5.7	33,647	14.4	70.9	12.6
NATBAL752	33	33	0.0	100.0	0.0	987	25.3	29.9	25.3
NAVAL N3N	119	52	37.3	43.5	16.2	1,579	45.8	30.5	26.5
NAVIONNAVION	582	395	13.6	67.9	9.2	39,337	26.4	99.5	22.6
NORD 3202	26	6	58.5	21.4	12.5	150	59.7	27.0	11.6
NORD SV4	46	29	17.1	62.6	10.7	1,430	31.9	49.6	26.9
NORWST65	57	23	14.5	40.5	5.9	781	18.6	33.8	11.7
ORLHELH19	73	44	33.5	60.3	20.2	7,014	59.1	159.2	48.7
ORLHEL58	33	11	60.3	33.3	20.1	220	60.3	20.0	0.0
PARTENP68	36	32	4.7	87.5	4.1	11,387	9.3	361.5	8.0
PICARDAX6	142	43	22.8	30.6	7.0	857	31.7	19.7	22.0
PILATSB4	27	24	8.8	89.5	7.9	3,289	33.7	136.1	32.5
PIPER 600	370	341	6.8	92.1	6.3	47,209	15.3	138.5	13.7
PIPER J2	59	18	28.0	30.4	8.5	359	32.3	20.0	16.1
PIPER J3	4,295	2,332	7.0	54.3	3.8	128,546	20.5	55.1	19.3
PIPER J4	242	84	15.6	34.8	5.4	4,260	22.9	50.5	16.8
PIPER J5	341	193	5.3	56.6	3.0	13,203	19.3	68.4	18.6



2.2 1989 GENERAL AVIATION POPULATION SIZE, ACTIVE AIRCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
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MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
PIPER PA12	1,357	848	10.8	62.5	6.7	60,504	30.8	71.3	28.8
PIPER PA14	105	8	187.2	7.4	13.8	311	188.0	40.1	17.9
PIPER PA15	184	111	13.1	60.2	7.9	10,205	47.5	92.1	45.6
PIPER PA16	367	196	11.7	53.5	6.3	8,484	18.7	43.2	14.5
PIPER PA17	104	67	15.7	64.2	10.1	2,779	23.8	41.6	17.8
PIPER PA18	3,638	3,001	3.3	82.5	2.7	338,262	11.2	112.7	10.7
PIPER PA20	450	190	19.6	42.3	8.3	16,535	34.2	86.8	28.1
PIPER PA22	4,738	3,253	6.4	68.7	4.4	149,642	12.1	46.2	10.4
PIPER PA23	3,277	2,753	5.4	84.0	4.5	450,573	12.3	163.7	11.0
PIPER PA24	3,161	2,718	4.4	86.0	3.8	299,829	19.9	110.3	19.4
PIPER PA25	1,099	941	7.0	85.6	6.0	151,903	14.9	161.4	13.2
PIPER PA28	22,051	21,065	1.0	95.5	0.9	3,034,546	7.3	144.2	7.2
PIPER PA30	1,246	1,246	0.0	100.0	0.0	206,035	14.6	165.4	14.6
PIPER PA31	1,787	1,747	1.2	97.8	1.2	528,265	8.3	306.4	8.5
PIPER PA31T	519	519	0.0	100.0	0.0	141,866	12.7	273.3	12.7
PIPER PA32	4,273	4,212	1.2	98.6	1.2	642,898	9.1	152.6	9.0
PIPER PA34	1,867	1,752	3.8	93.8	3.5	412,835	10.8	235.6	10.1
PIPER PA36	318	252	11.7	79.3	9.3	47,414	24.8	188.0	21.9
PIPER PA38	1,235	1,181	2.7	95.6	2.6	318,221	13.1	269.5	12.8
PIPER PA42	98	98	0.0	100.0	0.0	29,985	10.3	306.0	10.3
PIPER PA44	304	303	1.6	99.6	1.6	125,078	20.1	413.1	20.0

2.2 1989 GENERAL AVIATION POPULATION SIZE, ACTIVE AIRCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
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MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
PIPER PA46	294	283	4.3	96.1	4.1	52,453	11.6	185.6	10.8
PROPTJ200	69	49	10.8	70.9	7.7	3,306	16.5	67.6	12.5
RAVEN RX6	192	73	21.0	38.1	8.0	1,429	31.7	19.5	23.8
RAVEN S50	82	22	31.3	27.1	8.5	728	41.7	32.8	27.5
RAVEN S55	768	479	16.6	62.3	10.3	12,726	33.2	26.6	28.7
RAVEN S57	66	66	0.0	100.0	0.0	7,903	52.2	119.7	52.2
RAVEN S60	229	152	21.3	66.2	14.1	6,082	34.7	40.1	27.3
RAVEN S66	51	37	30.3	73.3	22.2	2,397	38.6	64.1	23.9
RKWE1500	30	30	0.0	100.0	0.0	7,328	13.6	244.3	13.6
RKWE1700	23	21	10.7	91.7	9.8	4,286	18.6	203.3	15.2
RKWE1NA265	290	289	1.4	99.5	1.4	114,156	10.5	395.6	10.4
ROBSINR22	408	395	0.6	96.9	0.6	176,948	3.2	447.6	3.2
ROLSCHLS	125	119	4.8	94.9	4.5	6,246	22.4	52.7	21.9
RYAN ST3	168	111	27.9	66.0	18.4	6,769	39.3	61.0	27.7
RYAN STA	33	19	24.8	57.1	14.2	401	40.0	21.3	31.4
SAAB SF340	42	16	45.3	39.1	17.7	22,477	49.7	1,367.7	20.4
SCHEMPDISCUS	44	44	0.0	100.0	0.0	3,599	19.3	81.8	19.3
SCHLERASK21	31	31	0.0	100.0	0.0	8,975	18.2	289.5	18.2
SCHLERASW15	35	33	5.3	93.1	4.9	1,849	14.4	56.7	13.4
SCHLERASW19	57	57	0.0	100.0	0.0	3,606	17.1	63.3	17.1
SCHLERASW20	90	90	0.0	100.0	0.0	7,160	12.6	79.6	12.6

2.2 1989 GENERAL AVIATION POPULATION SIZE, ACTIVE AIRCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
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MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
SCHLERK8	23	19	9.3	81.0	7.6	916	34.3	49.2	33.0
SCHLERKA6	69	58	10.8	83.7	9.1	3,044	60.0	52.7	59.0
SCHWZH269	54	48	2.0	89.6	1.8	27,400	4.9	566.2	4.5
SCWZERG164	213	150	16.1	70.3	11.3	40,769	20.0	272.5	11.9
SCWZERSG1	745	534	4.1	71.7	2.9	29,244	12.5	54.8	11.8
SCWZERSG2	549	417	8.2	75.9	6.2	58,629	21.0	140.7	19.4
SEMCO MODELT	29	4	76.9	14.3	11.0	99	81.5	24.0	26.9
SKRSKYS55	34	7	55.0	20.0	11.0	323	58.7	47.5	20.5
SKRSKYS58	72	35	17.9	48.6	8.7	4,073	21.0	116.4	10.8
SKRSKYS58T	38	27	11.2	71.4	8.0	12,170	19.4	448.4	15.9
SKRSKYS61	28	14	6.7	49.6	3.3	12,133	10.2	873.6	7.7
SKRSKYS76	175	167	1.0	95.6	0.9	104,265	2.8	623.4	2.6
SLINDS100	295	226	12.7	76.7	9.7	14,423	27.8	63.7	24.7
SMITH 600	353	343	3.7	97.1	3.6	74,999	19.8	218.8	19.4
SNIAS 350	271	255	1.1	94.0	1.0	127,895	2.9	501.9	2.7
SNIAS SA318	21	0	0.0	0.0	0.0	0	0.0	0.0	0.0
SNIAS SA341	29	20	15.4	68.7	10.6	2,958	25.8	148.6	20.8
SOCATAMS894	37	19	31.9	52.2	16.7	1,356	40.6	70.3	25.0
SOCATARALLYE	21	21	0.0	100.0	0.0	1,389	26.3	66.1	26.3
SOCATATB10	52	52	0.0	100.0	0.0	6,463	14.6	124.3	14.6
SOCATATB20	124	124	0.0	100.0	0.0	16,067	17.2	129.6	17.2

2.2 1989 GENERAL AVIATION POPULATION SIZE, ACTIVE AIRCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
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MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
SPHRTHCIRRUS	95	83	8.8	87.5	7.7	4,022	27.0	48.4	25.6
SPHRTHNIMBUS	52	47	10.7	90.9	9.8	2,345	12.9	49.6	7.2
SPHRTHVENTUS	44	44	0.0	100.0	0.0	2,390	32.7	54.3	32.7
STBROSSD3	75	38	61.1	50.0	30.6	49,225	73.5	1,312.7	40.8
STNSON10	157	24	21.9	15.6	3.4	572	24.7	23.3	11.3
STNSONJR	20	0	0.0	0.0	0.0	0	0.0	0.0	0.0
STNSONL5	121	43	20.2	35.6	7.2	2,291	29.3	53.2	21.2
STNSONSR9	26	4	41.9	15.0	6.3	112	46.9	28.7	21.0
STNSONV77	108	46	28.2	42.4	12.0	1,671	38.6	36.5	26.4
STOLAMRC3	217	115	16.6	53.0	8.8	3,316	42.5	28.8	39.1
SUPAC LA	99	28	14.6	28.7	4.2	801	16.7	28.2	8.1
SUPAC V	28	0	0.0	0.0	0.0	0	0.0	0.0	0.0
SWRNGNSA226	177	168	7.0	94.9	6.7	128,333	20.1	801.6	16.4
SWRNGNSA227	84	84	0.0	100.0	0.0	71,855	30.9	855.4	30.9
SWRNGNSA26	82	80	4.6	97.8	4.5	15,857	16.6	197.8	16.0
TCRAFTD	297	120	16.1	40.2	6.5	7,099	21.1	59.4	13.6
TCRAFTA	33	9	22.9	26.9	6.2	1,843	43.3	207.4	36.8
TCRAFTBC	1,865	1,100	11.1	59.0	6.5	52,249	21.3	47.5	18.2
TCRAFTBF	41	21	20.2	51.5	10.4	1,156	32.3	54.7	25.1
TCRAFTBL	216	71	32.3	32.7	10.6	2,874	38.5	40.6	20.9
TEMCO 11A	27	13	26.1	48.3	12.6	1,100	32.1	84.4	18.7

2.2 1989 GENERAL AVIATION POPULATION SIZE, ACTIVE AIRCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY SDR AIRCRAFT MANUFACTURER/MODEL GROUP

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MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
TH55	60	42	3.8	70.1	2.6	4,584	7.7	108.9	6.7
THUNDRA X7	86	60	21.4	69.2	14.8	1,723	34.0	28.9	26.4
TMF SONNAVION	633	421	8.6	66.6	5.8	26,247	14.3	62.3	11.4
TOMCAT	38	24	13.1	63.8	8.3	4,830	16.4	199.2	9.8
TRYTEK 65	345	155	14.3	45.0	6.4	5,605	23.8	36.1	19.1
TRYTEK K	28	8	47.9	29.4	14.1	277	49.1	33.7	10.9
UNIVAC GC1	679	409	12.9	60.2	7.8	35,613	25.7	87.1	22.2
UNIVAR 108	2,006	1,142	12.4	56.9	7.0	282,351	52.4	247.2	50.9
UNIVAR 415	2,402	1,630	8.0	67.8	5.4	84,082	14.2	51.6	11.7
VALENT 17	22	22	0.0	100.0	0.0	1,155	28.8	52.5	28.8
VARGA 2150	131	121	7.1	92.3	6.6	8,772	14.9	72.5	13.1
WACO ASO	29	8	27.7	28.6	7.9	318	36.6	38.3	23.9
WACO GXE	35	5	32.9	14.8	4.9	136	42.4	26.3	26.8
WACO R	35	13	28.3	35.9	10.2	353	38.0	28.0	25.5
WACO UPF7	159	95	7.7	60.0	4.6	7,153	30.2	75.0	29.2
WACO YK	53	16	25.8	30.5	7.9	646	30.6	40.0	16.4
WSK M18	37	31	11.0	85.0	9.3	16,285	15.4	517.8	10.8
WTHRLY 201	63	47	12.9	75.2	9.7	13,158	15.9	277.9	9.3
TOTAL	267,191	219,737	0.5	82.2	0.4	35,014,800	1.6	154.5	1.6

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

2.3 1989 GENERAL AVIATION POPULATION SIZE, ACTIVE AIRCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY REGION OF BASED AIRCRAFT

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REGION	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
ALASKAN	8,615	6,520	6.3	75.7	6.3	950,931	7.5	140.8	7.6
CENTRAL	14,730	11,929	5.5	81.0	6.0	1,788,936	7.1	145.8	6.3
EASTERN	30,730	25,236	3.6	82.1	4.0	3,644,123	5.4	139.0	4.4
GREAT LAKES	48,068	39,383	2.8	81.9	3.1	5,418,355	3.8	134.6	3.4
NEW ENGLAND	10,895	9,395	6.2	86.2	7.2	1,403,634	7.6	145.0	6.7
NORTHWEST MT	27,114	21,635	3.9	79.8	4.1	2,988,578	5.2	134.9	4.6
SOUTHERN	43,640	36,875	2.9	84.5	3.3	6,513,672	3.9	174.4	4.8
SOUTHWESTERN	36,480	30,997	3.2	85.0	3.7	5,863,608	4.5	183.7	5.2
WESTERN-PACIFIC	46,831	37,749	2.8	80.6	3.0	6,196,974	4.1	159.9	5.0
TOTAL	267,191	219,737	0.5	82.2	0.4	35,043,496	1.7	154.2	1.6

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

2.4 1989 GENERAL AVIATION POPULATION SIZE, ACTIVE AIRCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY STATE OF BASED AIRCRAFT

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STATE	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
ALABAMA	3,884	3,347	10.5	86.2	12.3	557,946	12.2	169.1	9.3
ALASKA	8,615	6,520	6.3	75.7	6.3	950,931	7.5	140.8	7.6
ARIZONA	6,628	5,234	8.3	79.0	8.8	1,114,648	14.4	205.9	18.4
ARKANSAS	3,333	2,879	11.3	86.4	13.4	542,157	14.4	182.9	12.1
CALIFORNIA	36,685	29,757	3.2	81.1	3.5	4,437,304	3.7	145.9	5.0
COLORADO	5,329	4,539	9.0	85.2	10.4	642,519	12.5	142.3	10.9
CONNECTICUT	2,451	2,157	13.2	88.0	15.9	332,984	15.4	153.9	11.6
DELAWARE	1,661	1,537	15.4	92.5	19.7	377,713	31.1	236.6	23.9
DIST. OF COLUMBIA	70	63	47.6	89.9	61.7	16,932	77.5	268.9	18.5
FLORIDA	16,335	13,599	5.0	83.3	5.6	2,567,717	5.9	186.5	10.1
GEORGIA	6,368	5,340	8.3	83.8	9.4	805,813	10.9	147.5	7.9
HAWAII	642	519	22.9	80.7	25.1	290,191	33.1	544.6	13.6
IDAHO	2,493	1,998	13.4	80.2	14.4	218,172	15.6	106.7	9.7
ILLINOIS	8,850	7,581	7.0	85.7	8.2	1,107,247	8.2	144.2	8.1
INDIANA	4,879	3,782	9.8	77.5	10.2	511,187	11.9	134.0	9.4
IOWA	3,226	2,622	11.9	81.3	13.0	330,307	16.6	119.9	9.3
KANSAS	4,272	3,466	10.3	81.1	11.2	471,334	12.9	133.9	11.2
KENTUCKY	1,997	1,606	15.2	80.4	16.5	215,083	17.9	133.8	10.3
LOUISIANA	3,892	3,270	9.7	84.0	11.1	1,074,130	8.0	323.1	7.1
MAINE	1,817	1,473	15.5	81.0	16.9	228,144	22.3	140.0	28.2
MARYLAND	3,499	2,897	11.3	82.8	12.7	344,521	14.0	119.3	11.6
MASSACHUSETTS	3,706	3,265	10.6	88.1	12.8	506,187	11.2	153.6	9.3
MICHIGAN	9,515	7,875	6.7	82.8	7.5	994,096	7.7	121.0	7.1

2.4 1989 GENERAL AVIATION POPULATION SIZE, ACTIVE AIRCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY STATE OF BASED AIRCRAFT

PAGE 2 OF 3

STATE	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
MINNESOTA	6,144	4,750	8.8	77.3	9.0	699,752	11.1	144.4	8.4
MISSISSIPPI	2,286	1,954	13.7	85.5	16.0	297,827	16.9	148.8	14.3
MISSOURI	5,187	4,183	9.7	80.6	10.4	722,284	11.2	166.8	12.3
MONTANA	2,450	2,004	13.2	81.8	14.6	246,720	18.4	118.5	13.8
NEBRASKA	2,046	1,659	14.9	81.1	16.2	265,010	19.3	158.8	12.4
NEVADA	2,876	2,239	12.4	77.8	13.0	354,831	14.1	155.6	10.6
NEW HAMPSHIRE	1,709	1,458	15.8	85.3	18.3	194,293	18.4	123.9	14.4
NEW JERSEY	4,673	3,994	9.5	85.5	11.1	579,894	10.9	144.7	10.5
NEW MEXICO	2,808	2,401	12.2	85.5	14.2	297,815	17.3	125.1	15.4
NEW YORK	8,252	6,601	7.3	80.0	7.8	959,899	8.7	142.2	7.6
NORTH CAROLINA	6,041	5,208	8.4	86.2	9.9	750,328	10.3	140.2	10.1
NORTH DAKOTA	1,936	1,637	15.3	84.5	17.6	300,111	22.0	186.3	19.8
OHIO	9,650	7,896	6.7	81.8	7.4	1,046,951	8.1	129.9	8.6
OKLAHOMA	4,766	4,127	9.6	86.6	11.4	599,009	12.1	143.8	12.3
OREGON	5,755	4,353	8.9	75.6	8.9	572,090	9.5	129.6	7.6
PENNSYLVANIA	7,485	5,956	7.7	79.6	8.2	721,713	10.9	109.9	7.4
RHODE ISLAND	520	456	30.0	87.8	35.9	79,635	38.1	176.0	30.3
SOUTH CAROLINA	2,404	2,085	13.3	86.7	11.7	438,619	17.2	220.7	13.0
SOUTH DAKOTA	1,514	1,290	17.1	85.2	19.8	169,538	24.9	127.6	13.8
TENNESSEE	3,784	3,306	10.3	87.4	12.3	774,381	14.9	226.1	20.5
TEXAS	21,680	18,321	4.3	84.5	4.9	3,350,498	6.5	175.8	9.1
UTAH	1,713	1,388	16.3	81.0	17.9	296,656	19.3	194.2	14.2
VERMONT	692	587	25.2	84.8	28.7	62,390	40.3	103.0	16.1



2.4 1989 GENERAL AVIATION POPULATION SIZE, ACTIVE AIRCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY STATE OF BASED AIRCRAFT

PAGE 3 OF 3

STATE	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
VIRGINIA	3,959	3,323	10.3	83.9	11.8	521,207	13.2	150.6	12.2
WASHINGTON	8,292	6,439	7.5	77.7	7.7	903,098	9.2	137.2	9.8
WEST VIRGINIA	1,131	865	20.8	76.5	21.4	118,245	26.5	138.4	16.5
WISCONSIN	5,579	4,572	9.1	81.9	10.1	589,473	11.6	125.2	9.1
WYOMING	1,083	913	19.7	84.3	22.4	107,323	27.6	114.5	17.2
PUERTO RICO	426	333	31.8	78.2	33.1	84,277	29.8	222.1	11.3
OTHER U.S. TERRITORIES	114	97	55.7	84.7	64.3	21,678	44.2	217.3	11.1
TOTAL	267,191	219,737	0.5	82.2	0.4	34,768,808	10.6	154.5	1.6

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

2.5 1989 GENERAL AVIATION TOTAL NUMBER OF LANDINGS BY AIRCRAFT TYPE  
BY REGION OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 2

AIRCRAFT TYPE	ALASKAN	CENTRAL	EASTERN	GREAT LAKES	NEW ENGLAND	NORTHWEST MOUNTAIN	SOUTHERN	SOUTH WESTERN	WESTERN-PACIFIC	TOTAL
<b>FIXED WING</b>										
<b>FIXED WING - PISTON</b>										
1 ENG: 1-3 SEATS	267,363	1,124,132	1,783,761	2,651,017	671,114	1,324,423	2,769,503	4,169,632	2,232,985	16,993,930
% STD. ERROR	11.2	20.3	22.1	12.0	20.3	16.2	11.7	17.8	19.8	6.5
1 ENG: 4+ SEATS	456,791	1,018,475	1,631,467	3,169,147	1,045,338	1,372,906	3,065,218	2,183,743	3,133,456	17,076,541
% STD. ERROR	11.9	12.4	8.5	9.8	12.4	9.4	11.6	13.2	9.5	4.0
1 ENGINE: TOTAL	724,154	2,142,607	3,415,228	5,820,164	1,716,452	2,697,329	5,834,721	6,353,375	5,366,441	34,070,471
% STD. ERROR	8.6	12.2	12.2	7.6	10.9	9.3	8.2	12.5	9.9	3.8
2 ENG: 1-6 SEATS	26,199	76,383	240,674	463,237	114,617	153,276	778,752	351,796	686,340	2,891,274
% STD. ERROR	52.3	33.3	20.3	16.3	41.6	20.6	16.7	22.0	25.4	8.9
2 ENG: 7+ SEATS	8,777	80,728	122,245	328,486	77,300	186,989	538,561	274,074	195,952	1,813,112
% STD. ERROR	55.3	36.0	26.1	15.9	40.4	25.0	17.8	28.4	26.9	8.9
2 ENGINE: TOTAL	34,976	157,111	362,919	791,723	191,917	340,265	1,317,313	625,870	882,292	4,704,386
% STD. ERROR	41.6	24.6	16.1	11.6	29.7	16.6	12.3	17.5	20.7	6.4
PISTON: OTHER	2,393	0	26,049	0	0	31	468	0	2,971	31,912
% STD. ERROR	76.2	0.0	91.0	0.0	0.0	536.3	613.8	0.0	41.1	75.2
PISTON: TOTAL	761,523	2,299,718	3,804,196	6,611,887	1,908,369	3,037,625	7,152,502	6,979,245	6,251,704	38,806,769
% STD. ERROR	8.4	11.5	11.1	6.8	10.3	8.4	7.1	11.5	9.0	3.4
<b>FIXED WING - TURBOPROP</b>										
2 ENG: 1-12 SEATS	66,624	100,694	220,007	282,150	18,568	113,630	365,615	219,618	406,037	1,792,943
% STD. ERROR	107.6	30.2	27.2	22.0	61.2	34.4	17.7	22.1	32.0	11.0
2 ENG: 13+ SEATS	81,257	120,426	260,480	45,204	171,236	98,454	150,454	196,916	580,620	1,705,047
% STD. ERROR	30.3	51.0	63.4	21.9	76.9	30.2	39.5	45.7	49.9	22.4
2 ENGINE: TOTAL	147,881	221,120	480,487	327,354	189,804	212,084	516,069	416,534	986,657	3,497,990
% STD. ERROR	51.2	31.0	36.6	19.2	69.6	23.2	17.0	24.5	32.1	12.3
TURBOPROP: OTHER	0	1,071	1,257	15,781	0	11,706	60,866	163,254	111,870	365,805
% STD. ERROR	0.0	23.6	58.3	46.6	0.0	65.0	47.0	38.9	56.8	25.9
TURBOPROP: TOTAL	147,881	222,191	481,744	343,135	189,804	223,790	576,935	579,788	1,098,527	3,863,795
% STD. ERROR	51.2	30.9	36.5	18.4	69.6	22.2	16.0	20.7	29.5	11.4

2.5 1989 GENERAL AVIATION TOTAL NUMBER OF LANDINGS BY AIRCRAFT TYPE  
BY REGION OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 2

AIRCRAFT TYPE	ALASKAN	CENTRAL	EASTERN	GREAT LAKES	NEW ENGLAND	NORTHWEST MOUNTAIN	SOUTHERN	SOUTH WESTERN	WESTERN-PACIFIC	TOTAL
FIXED WING - TURBOJET										
2 ENGINE: TOTAL	810	61,518	344,900	336,030	30,913	67,337	199,168	145,395	186,252	1,372,223
% STD. ERROR	186.9	27.4	22.5	17.6	38.1	31.0	16.2	21.8	30.9	9.2
TURBOJET: OTHER	0	4,216	23,503	23,399	1,393	2,053	9,016	7,416	11,691	82,687
% STD. ERROR	0.0	68.4	45.6	31.0	94.2	108.7	49.3	118.4	43.1	21.1
TURBOJET: TOTAL	810	65,734	368,403	359,429	32,306	69,390	208,184	152,811	197,943	1,455,010
% STD. ERROR	186.9	26.1	21.3	16.6	36.7	30.2	15.6	21.5	29.2	8.7
FIXED WING: TOTAL	910,214	2,587,643	4,654,343	7,314,451	2,130,479	3,330,805	7,937,621	7,711,844	7,548,174	44,125,574
% STD. ERROR	10.9	10.5	10.0	6.3	11.1	7.9	6.5	10.5	8.6	3.2
ROTORCRAFT										
PISTON	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
% STD. ERROR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TURBINE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
% STD. ERROR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ROTORCRAFT: TOTAL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
% STD. ERROR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OTHER	11,654	18,369	99,030	68,148	30,748	89,037	49,310	79,276	203,813	649,385
% STD. ERROR	83.0	45.7	20.7	28.2	30.8	23.7	61.7	48.0	20.4	11.5
TOTAL	921,868	2,606,012	4,753,373	7,382,599	2,161,227	3,419,842	7,986,931	7,791,120	7,751,987	44,774,959
% STD. ERROR	10.8	10.5	9.8	6.2	11.0	7.7	6.5	10.4	8.4	3.2

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

DETAILS OF ROTORCRAFT LANDINGS ARE PRESENTED IN TABLES 9.5 THROUGH 9.8

2.6 1989 GENERAL AVIATION NUMBER OF LANDINGS IN LOCAL FLIGHT BY AIRCRAFT TYPE  
BY REGION OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 2

AIRCRAFT TYPE	ALASKAN	CENTRAL	EASTERN	GREAT LAKES	NEW ENGLAND	NORTHWEST MOUNTAIN	SOUTHERN	SOUTH WESTERN	WESTERN-PACIFIC	TOTAL
<b>FIXED WING</b>										
<b>FIXED WING - PISTON</b>										
1 ENG: 1-3 SEATS	167,401	948,213	1,503,166	2,291,942	574,605	1,178,620	2,373,706	3,339,475	1,941,508	14,318,636
% STD. ERROR	14.0	20.1	23.8	12.9	22.6	17.2	12.0	15.5	20.8	6.3
1 ENG: 4+ SEATS	191,255	598,299	1,003,455	1,932,114	682,853	816,409	2,032,128	1,228,900	1,830,182	10,315,595
% STD. ERROR	14.4	14.4	9.9	12.5	15.4	12.3	13.9	17.5	12.4	5.1
1 ENGINE: TOTAL	358,656	1,546,512	2,506,621	4,224,056	1,257,458	1,995,029	4,405,834	4,568,375	3,771,690	24,634,231
% STD. ERROR	10.1	13.5	14.8	9.1	13.3	11.3	9.1	12.3	12.3	4.3
2 ENG: 1-6 SEATS	7,647	26,721	71,664	148,051	21,312	50,252	352,015	142,786	371,042	1,191,490
% STD. ERROR	68.0	48.1	31.2	25.1	53.8	38.2	27.4	38.4	34.1	14.8
2 ENG: 7+ SEATS	2,475	20,700	27,696	49,404	5,811	34,497	144,468	33,442	51,849	370,342
% STD. ERROR	93.2	59.3	40.4	30.2	72.4	47.7	32.3	79.5	39.5	17.3
2 ENGINE: TOTAL	10,122	47,421	99,360	197,455	27,123	84,749	496,483	176,228	422,891	1,561,832
% STD. ERROR	56.2	37.5	25.1	20.3	45.1	29.8	21.6	34.6	30.3	12.0
PISTON: OTHER	95	0	102	0	0	18	239	0	62	516
% STD. ERROR	671.4	0.0	199.9	0.0	0.0	651.9	856.3	0.0	739.8	427.3
PISTON: TOTAL	368,873	1,593,933	2,606,083	4,421,511	1,284,581	2,079,796	4,902,556	4,744,603	4,194,643	26,196,579
% STD. ERROR	9.9	13.2	14.3	8.7	13.0	10.9	8.5	11.9	11.4	4.1
<b>FIXED WING - TURBOPROP</b>										
2 ENG: 1-12 SEATS	30,360	6,250	22,086	19,154	1,508	11,559	17,261	16,011	32,085	156,274
% STD. ERROR	119.8	163.4	41.9	56.4	130.0	65.8	100.0	169.4	36.3	34.2
2 ENG: 13+ SEATS	306	3,311	4,526	14,473	208	22,467	8,755	19,870	146,259	220,175
% STD. ERROR	173.4	11.5	30.9	58.2	457.0	55.3	55.4	76.8	30.7	22.7
2 ENGINE: TOTAL	30,666	9,561	26,612	33,627	1,716	34,026	26,016	35,881	178,344	376,449
% STD. ERROR	118.6	106.9	35.1	40.7	127.0	42.8	68.9	86.8	26.0	19.5
TURBOPROP: OTHER	0	928	992	902	0	10,907	50,530	148,347	111,805	324,411
% STD. ERROR	0.0	32.8	54.0	57.6	0.0	72.8	55.8	40.0	58.3	28.6
TURBOPROP: TOTAL	30,666	10,489	27,604	34,529	1,716	44,933	76,546	184,228	290,149	700,860
% STD. ERROR	118.6	97.5	33.9	39.7	127.0	36.9	43.6	36.4	27.6	16.9

2.6 1989 GENERAL AVIATION NUMBER OF LANDINGS IN LOCAL FLIGHT BY AIRCRAFT TYPE  
BY REGION OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 2

AIRCRAFT TYPE	ALASKAN	CENTRAL	EASTERN	GREAT LAKES	NEW ENGLAND	NORTHWEST MOUNTAIN	SOUTHERN	SOUTH WESTERN	WESTERN-PACIFIC	TOTAL
FIXED WING - TURBOJET										
2 ENGINE: TOTAL	5	16,585	40,725	17,336	1,114	2,521	6,323	27,764	69,546	181,919
% STD. ERROR	1272.9	54.5	45.3	64.9	267.0	88.3	128.4	76.0	79.2	35.2
TURBOJET: OTHER	0	327	1,307	238	95	327	425	1,199	4,449	6,367
% STD. ERROR	0.0	232.7	98.6	1360.7	261.0	384.3	308.5	542.5	77.2	100.1
TURBOJET: TOTAL	5	16,912	42,032	17,574	1,209	2,848	6,748	28,963	73,995	190,286
% STD. ERROR	1272.9	53.7	44.0	66.6	246.8	89.8	121.9	76.2	74.5	33.9
FIXED WING: TOTAL	399,544	1,621,334	2,675,719	4,473,614	1,287,506	2,127,577	4,985,850	4,957,794	4,558,787	27,087,725
% STD. ERROR	12.9	13.0	13.9	8.6	13.0	10.7	8.4	11.5	10.7	4.0
ROTORCRAFT										
PISTON	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
% STD. ERROR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TURBINE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
% STD. ERROR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ROTORCRAFT: TOTAL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
% STD. ERROR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OTHER	6,867	16,195	88,847	65,753	29,370	87,187	46,833	75,638	199,064	615,754
% STD. ERROR	80.4	34.5	19.1	19.8	28.4	21.9	43.1	39.6	17.4	9.6
TOTAL	406,411	1,637,529	2,764,566	4,539,367	1,316,876	2,214,764	5,032,683	5,033,432	4,757,851	27,703,479
% STD. ERROR	12.8	12.9	13.5	8.5	12.7	10.3	8.3	11.3	10.3	3.9

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

2.7 1989 GENERAL AVIATION NUMBER OF LANDINGS IN CROSS COUNTRY FLIGHT BY AIRCRAFT TYPE  
BY REGION OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 2

AIRCRAFT TYPE	ALASKAN	CENTRAL	EASTERN	GREAT LAKES	NEW ENGLAND	NORTHWEST MOUNTAIN	SOUTHERN	SOUTH WESTERN	WESTERN-PACIFIC	TOTAL
<b>FIXED WING</b>										
<b>FIXED WING - PISTON</b>										
1 ENG: 1-3 SEATS	99,990	172,151	280,700	355,544	96,390	143,473	391,895	818,245	290,573	2,648,961
% STD. ERROR	19.0	24.7	25.8	11.8	18.6	14.6	14.9	38.0	25.0	12.8
1 ENG: 4+ SEATS	264,035	420,073	627,625	1,235,862	362,107	555,874	1,032,669	953,501	1,304,117	6,755,863
% STD. ERROR	17.1	13.6	10.8	12.5	11.3	9.9	10.2	15.3	8.4	4.3
1 ENGINE: TOTAL	364,025	592,224	908,325	1,591,406	458,497	699,347	1,424,564	1,771,746	1,594,690	9,404,824
% STD. ERROR	13.4	12.0	11.0	10.1	9.8	8.4	8.4	19.4	8.2	4.7
2 ENG: 1-6 SEATS	18,549	49,265	167,828	314,430	93,486	102,611	427,138	208,376	312,044	1,693,727
% STD. ERROR	54.4	33.8	23.0	19.9	51.2	22.4	18.5	23.6	24.5	9.0
2 ENG: 7+ SEATS	5,953	59,816	95,153	280,288	71,118	152,019	391,917	240,962	140,452	1,437,678
% STD. ERROR	66.2	40.9	28.7	17.7	43.9	29.2	24.8	33.5	34.2	11.0
2 ENGINE: TOTAL	24,502	109,081	262,981	594,718	164,604	254,630	819,055	449,338	452,496	3,131,405
% STD. ERROR	44.2	27.1	18.0	13.4	34.7	19.6	15.3	21.1	19.9	7.0
PISTON: OTHER	2,319	0	40,219	0	0	13	229	0	2,908	45,688
% STD. ERROR	77.6	0.0	97.5	0.0	0.0	520.0	504.2	0.0	44.1	86.0
PISTON: TOTAL	390,846	701,305	1,211,525	2,186,124	623,101	953,990	2,243,848	2,221,084	2,050,094	12,581,917
% STD. ERROR	12.8	11.0	9.7	8.2	11.7	8.1	7.7	16.0	7.8	4.0
<b>FIXED WING - TURBOPROP</b>										
2 ENG: 1-12 SEATS	36,186	94,447	197,454	262,811	17,066	102,056	347,058	203,819	371,032	1,631,929
% STD. ERROR	104.8	33.8	29.9	24.4	62.9	35.8	19.5	26.4	36.0	11.8
2 ENG: 13+ SEATS	80,917	116,276	257,433	29,099	171,031	76,428	129,768	174,056	457,689	1,492,697
% STD. ERROR	30.8	53.9	67.3	25.9	82.3	37.8	44.4	53.5	69.9	27.6
2 ENGINE: TOTAL	117,103	210,723	454,887	291,910	188,097	178,484	476,826	377,875	828,721	3,124,626
% STD. ERROR	38.8	33.4	40.2	22.1	75.1	26.1	18.7	28.4	41.8	14.5
TURBOPROP: OTHER	0	153	264	15,649	0	808	11,946	2,320	72	31,212
% STD. ERROR	0.0	7.7	132.9	64.6	0.0	65.5	71.2	70.5	164.2	42.7
TURBOPROP: TOTAL	117,103	210,876	455,151	307,559	188,097	179,292	488,772	380,195	828,793	3,155,838
% STD. ERROR	38.8	33.4	40.2	21.3	75.1	26.0	18.3	28.3	41.8	14.4

2.7 1989 GENERAL AVIATION NUMBER OF LANDINGS IN CROSS COUNTRY FLIGHT BY AIRCRAFT TYPE  
BY REGION OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 2

AIRCRAFT TYPE	ALASKAN	CENTRAL	EASTERN	GREAT LAKES	NEW ENGLAND	NORTHWEST MOUNTAIN	SOUTHERN	SOUTH WESTERN	WESTERN-PACIFIC	TOTAL
FIXED WING - TURBOJET										
2 ENGINE: TOTAL	804	45,112	303,127	319,471	29,847	64,395	191,400	117,450	122,694	1,194,300
% STD. ERROR	188.7	29.7	22.5	20.2	41.1	34.1	18.0	21.7	26.2	9.4
TURBOJET: OTHER	0	3,903	22,225	23,222	1,329	2,009	8,617	6,167	7,255	74,727
% STD. ERROR	0.0	72.5	52.1	37.3	109.0	81.6	49.6	69.7	50.5	22.1
TURBOJET: TOTAL	804	49,015	325,352	342,693	31,176	66,404	200,017	123,617	129,949	1,269,027
% STD. ERROR	188.7	27.9	21.2	19.0	39.6	33.2	17.4	20.9	24.9	8.9
FIXED WING: TOTAL	508,753	961,196	1,992,028	2,836,376	842,374	1,199,686	2,932,637	2,724,896	3,008,836	17,006,782
% STD. ERROR	13.3	11.0	11.4	7.1	18.9	7.8	6.8	13.7	12.7	4.0
ROTORCRAFT										
PISTON	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
% STD. ERROR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TURBINE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
% STD. ERROR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ROTORCRAFT: TOTAL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
% STD. ERROR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OTHER	5,136	2,395	9,878	2,421	1,541	1,824	2,367	3,533	4,807	33,908
% STD. ERROR	87.1	72.6	48.2	78.5	93.1	80.8	157.6	160.9	190.4	40.0
TOTAL	513,889	963,591	2,001,906	2,838,803	843,915	1,201,510	2,935,004	2,728,429	3,013,643	17,040,690
% STD. ERROR	13.2	10.9	11.4	7.1	18.9	7.7	6.8	13.7	12.7	4.0

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

## CHAPTER III

### PRIMARY USE

The general aviation fleet is used to provide a wide array of services, such as air taxi, air cargo, industrial, agricultural, business, personal, instructional, research, patrol and sport fishing. This chapter considers the major uses of the general aviation fleet. Eleven primary use categories for general aviation aircraft are defined in the glossary section of Appendix E.

This chapter consists of three tables and three figures. Table 3.1 presents the estimated number of general aviation aircraft, in use and inactive, broken down by primary use category and aircraft type. Table 3.2 provides data on the estimated number of nautical miles flown by primary use and aircraft type. The final table in this chapter, Table 3.3, presents the estimated total hours by aircraft type in each primary use category. Figure 3.1 displays data on the general aviation population's total hours flown by primary use. Figures 3.2 and 3.3 show, by aircraft type, the general aviation fleet's growth of total hours flown and growth of active general aviation fleet size for the years 1985 to 1989.

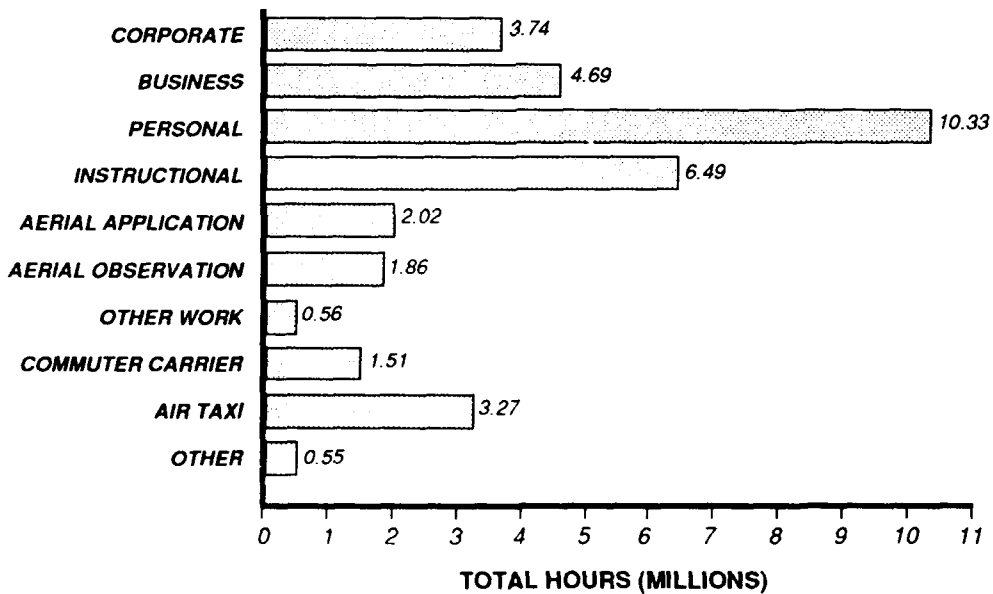
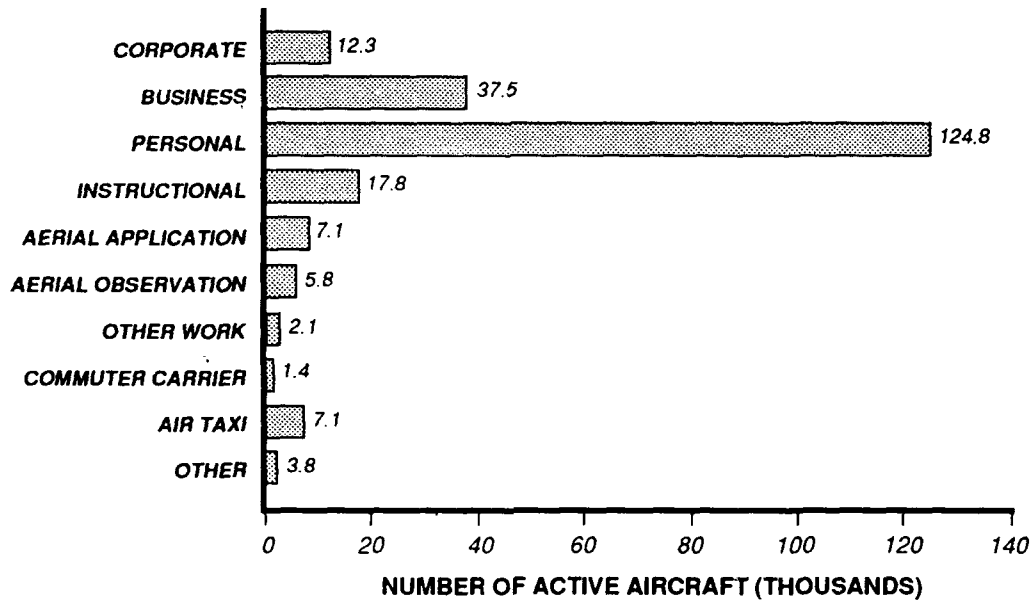
Some key observations to be drawn from the tables and figures in this chapter are:

- o Of the 267,191 aircraft in the general aviation fleet, 82.2 percent (219,737 aircraft) are in use.
- o The most frequent primary use category of the general aviation fleet is personal. More than 56 percent of the active number of aircraft in the general aviation fleet fall into this category. The second and third most frequent use categories are business with 17 percent and instructional with 8 percent.
- o The general aviation fleet flew a little over 10 million personal use hours in 1989, accounting for 29 percent of the total flight hours. The next closest use category, instructional, totaled more than 6.5 million hours.
- o About 61 percent of the active fixed wing piston aircraft and about 74 percent of the aircraft listed in the "other" aircraft type category are used for personal use.
- o Of the 193,815 active fixed wing piston aircraft, more than 8 percent (16,430 aircraft) are used for instructional purposes. These active instructional fixed wing piston aircraft account for 92 percent of the 17,780 general aviation aircraft used for instructional purposes.



- o More than 72 percent of the active turbojet and 53 percent of the active turboprop aircraft are used for corporate purposes. Rotorcraft uses are spread broadly across the various use categories, with 22 percent for air taxi, 14 percent for personal, and 17 percent for aerial observation purposes.
- o Over the six year period from 1984 through 1989, general aviation total flight time declined at an annual rate of 0.62 percent. The size of the general aviation fleet also decreased slightly. Close examination of the statistics in Figures 2.2 and 2.3 reveals that the decrease in total flight time and the size of the general aviation fleet is largely due to the lower usage of fixed wing piston engine aircraft. This downward trend in total flight time and in number of general aviation aircraft, however, appears to have reversed itself. Since 1987, the twin engine turboprop and turbojet aircraft have grown in both number and usage. Rotorcraft have also experienced increases, with the piston engine and turbine engine rotorcraft rising in number and total flight hours.
- o The general aviation fleet flew almost 4.5 billion nautical miles in 1989, with the nautical miles flown in the personal use category (more than 1.3 billion) by the fixed wing piston aircraft group accounting for the greatest mileage. The fixed wing piston aircraft also flew the most nautical miles of any aircraft group, 3.0 billion of the nearly 4.5 billion flown by the general aviation fleet.

**Figure 3.1**  
**1989 GENERAL AVIATION NUMBER OF**  
**AIRCRAFT AND TOTAL HOURS**  
**BY PRIMARY USE**



**SOURCE:** Tables 3.1 and 3.2

**Figure 3.2**  
**GROWTH OF ACTIVE GENERAL AVIATION FLEET**  
**BY AIRCRAFT TYPE, 1985-1989**  
*(Number of Aircraft)*

<b>Aircraft Type</b>	<b>Base Year 1984 (% Standard Error)</b>	<b>1985 (% Standard Error)</b>	<b>1986 (% Standard Error)</b>	<b>1987 (% Standard Error)</b>	<b>1988 (% Standard Error)</b>	<b>1989 (% Standard Error)</b>	<b>Compound Annual Growth Rate in %</b>
<b>FIXED WING</b>							
1-Engine Piston 1-3 Seats	61,989 (1.2)	58,829 (1.4)	62,427 (1.3)	63,533 (1.2)	59,553 (1.3)	62,618 (1.2)	0.20
1-Engine Piston 4+ Seats	109,933 (0.6)	105,555 (0.7)	109,351 (0.6)	107,502 (0.6)	105,207 (0.6)	107,752 (0.6)	-0.40
2-Engine Piston 1-6 Seats	16,539 (1.4)	15,627 (1.9)	16,166 (1.8)	15,741 (1.7)	15,143 (1.8)	15,927 (1.5)	-0.75
2-Engine Piston 7+ Seats	8,719 (2.2)	8,032 (2.2)	7,555 (3.0)	7,566 (2.0)	7,554 (2.4)	7,432 (1.9)	-3.14
Other Piston	262 (13.4)	148 (21.0)	148 (24.3)	112 (25.0)	99 (21.2)	86 (33.7)	-19.97
2-Engine Turboprop 1-12 Seats	4,992 (0.9)	4,833 (2.2)	4,089 (2.0)	4,337 (2.1)	4,231 (1.8)	4,888 (1.4)	-0.42
2-Engine Turboprop 13+ Seats	640 (4.5)	607 (6.4)	970 (5.8)	723 (4.3)	826 (5.3)	1,206 (5.0)	13.51
Other Turboprop	176 (8.5)	167 (7.8)	185 (16.2)	214 (8.9)	202 (6.9)	230 (14.3)	5.50
2-Engine Turbojet	3,780 (1.3)	3,914 (1.7)	4,037 (1.6)	3,900 (1.6)	3,821 (2.1)	4,004 (1.4)	1.16
Other Turbojet	540 (8.3)	460 (7.2)	444 (16.2)	458 (4.8)	367 (5.4)	398 (8.2)	-5.92
<b>ROTORCRAFT</b>							
Piston	2,936 (6.3)	2,877 (7.0)	2,921 (6.0)	2,813 (5.0)	2,584 (7.9)	3,244 (1.2)	2.02
Turbine	4,160 (2.8)	3,541 (4.5)	4,022 (3.1)	3,520 (4.2)	3,822 (2.7)	4,232 (0.4)	0.34
<b>OTHER</b>	6,275 (2.7)	6,263 (3.3)	7,010 (3.0)	6,783 (3.4)	6,857 (4.1)	7,721 (2.4)	4.23
<b>TOTAL AIRCRAFT</b>	220,943 (0.5)	210,654 (0.6)	220,044 (0.5)	217,183 (0.5)	210,226 (0.5)	219,737 (0.5)	-0.11

**NOTE:** Column summations may differ from printed totals due to estimation procedures.

\* See Appendix A for an explanation of Percent Standard Error.

**Figure 3.3**  
**GROWTH OF GENERAL AVIATION TOTAL HOURS FLOWN**  
**BY AIRCRAFT TYPE, 1985-1989**  
*(Thousands of Hours)*

<b>Aircraft Type</b>	<b>Base Year 1984 (% Standard Error)</b>	<b>1985 (% Standard Error)</b>	<b>1986 (% Standard Error)</b>	<b>1987 (% Standard Error)</b>	<b>1988 (% Standard Error)</b>	<b>1989 (% Standard Error)</b>	<b>Compound Annual Growth Rate in %</b>
<b>FIXED WING</b>							
1-Engine Piston 1-3 Seats	8,586 (3.8)	7,921 (3.7)	7,826 (3.7)	8,545 (3.8)	7,882 (4.0)	8,312 (3.9)	-0.65
1-Engine Piston 4+ Seats	14,919 (2.4)	14,931 (2.5)	14,112 (2.5)	13,596 (2.3)	14,065 (2.6)	13,995 (2.7)	-1.27
2-Engine Piston 1-6 Seats	2,934 (3.8)	2,725 (5.3)	2,798 (5.8)	2,635 (5.7)	2,298 (4.3)	2,718 (4.1)	-1.85
2-Engine Piston 7+ Seats	2,600 (6.4)	2,190 (6.4)	2,113 (7.4)	2,248 (9.0)	1,959 (7.4)	1,930 (5.3)	-5.79
Other Piston	102 (29.4)	26 (34.6)	11 (45.5)	15 (33.3)	22 (44.5)	17 (67.3)	-30.12
2-Engine Turboprop 1-12 Seats	1,715 (5.1)	1,465 (5.2)	1,648 (5.1)	1,483 (5.3)	1,558 (5.0)	1,692 (5.1)	-0.27
2-Engine Turboprop 13+ Seats	736 (10.2)	551 (10.5)	1,149 (10.6)	511 (11.9)	728 (12.0)	1,314 (9.8)	12.29
Other Turboprop	54 (24.1)	64 (10.9)	85 (14.1)	183 (24.6)	84 (14.9)	126 (16.6)	18.47
2-Engine Turbojet	1,328 (5.0)	1,461 (4.8)	1,566 (4.9)	1,421 (4.2)	1,548 (4.7)	1,542 (3.9)	3.03
Other Turbojet	237 (13.5)	161 (10.6)	88 (21.6)	107 (10.3)	130 (10.9)	112 (12.2)	-13.92
<b>ROTORCRAFT</b>							
Piston	591 (11.2)	564 (15.1)	804 (12.8)	652 (9.2)	576 (11.6)	749 (2.1)	4.85
Turbine	1,903 (6.3)	1,590 (8.9)	1,820 (7.8)	1,631 (9.6)	2,131 (7.6)	2,080 (0.9)	1.79
<b>OTHER</b>							
	358 (6.4)	414 (8.2)	394 (7.6)	416 (6.0)	613 (24.2)	429 (7.4)	3.68
<b>TOTAL AIRCRAFT</b>	36,118 (1.6)	34,063 (1.6)	34,416 (1.6)	33,443 (1.7)	33,593 (1.7)	35,015 (1.6)	-0.62

**NOTE:** Column summations may differ from printed totals due to estimation procedures.

\* See Appendix A for an explanation of Percent Standard Error

3.1 1989 GENERAL AVIATION NUMBER OF AIRCRAFT BY PRIMARY USE  
BY AIRCRAFT TYPE

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ACTIVE USE

AIRCRAFT TYPE	TOTAL ACTIVE	CORP- ORATE	BUSI- NESS	PER- SONAL	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	OTHER WORK	COMMUTER CARRIER	AIR TAXI	OTHER	IN- ACTIVE
FIXED WING												
FIXED WING - PISTON												
1 ENG: 1-3 SEATS												
EST. NO. ACTIVE	62,618	113	2,737	43,339	7,707	5,639	1,098	519	0	69	1,399	25,218
% STD. ERROR	1.2	57.1	10.7	1.5	6.6	3.2	16.3	22.0	0.0	52.6	15.7	
EST. % ACTIVE	71.3											
1 ENG: 4+ SEATS												
EST. NO. ACTIVE	107,752	1,686	25,795	67,499	7,151	141	2,449	499	143	1,684	704	12,494
% STD. ERROR	0.6	15.4	3.4	1.5	7.5	53.1	12.8	28.9	39.7	14.6	23.2	
EST. % ACTIVE	89.6											
1 ENGINE: TOTAL												
EST. NO. ACTIVE	170,370	1,799	28,532	110,838	14,858	5,780	3,547	1,018	143	1,753	2,103	37,712
% STD. ERROR	0.6	14.9	3.2	1.1	5.0	3.4	10.2	18.1	39.7	14.1	13.0	
EST. % ACTIVE	81.9											
2 ENG: 1-6 SEATS												
EST. NO. ACTIVE	15,927	1,510	5,778	5,572	1,335	123	438	22	51	1,003	94	1,911
% STD. ERROR	1.5	13.6	6.1	6.4	15.2	42.4	27.4	86.5	92.9	17.5	45.1	
EST. % ACTIVE	89.3											
2 ENG: 7+ SEATS												
EST. NO. ACTIVE	7,432	1,607	1,707	1,304	237	191	70	53	422	1,671	168	1,258
% STD. ERROR	1.9	12.6	11.6	13.6	38.8	38.6	48.5	53.5	22.4	11.1	33.8	
EST. % ACTIVE	85.5											
2 ENGINE: TOTAL												
EST. NO. ACTIVE	23,359	3,117	7,485	6,875	1,572	315	509	75	472	2,673	262	3,169
% STD. ERROR	1.2	9.2	5.4	5.8	14.2	28.8	24.5	45.6	22.4	9.5	27.0	
EST. % ACTIVE	88.1											
PISTON: OTHER												
EST. NO. ACTIVE	86	3	15	6	0	30	0	2	15	5	9	108
% STD. ERROR	33.8	146.1	69.1	96.4	0.0	29.4	0.0	151.9	69.1	104.9	72.1	
EST. % ACTIVE	44.2											
PISTON: TOTAL												
EST. NO. ACTIVE	193,815	4,919	36,032	117,719	16,430	6,125	4,056	1,096	631	4,431	2,374	40,989
% STD. ERROR	0.5	8.0	2.8	1.1	4.7	3.6	9.4	17.1	19.1	8.0	11.9	
EST. % ACTIVE	82.5											

3.1 1989 GENERAL AVIATION NUMBER OF AIRCRAFT BY PRIMARY USE  
BY AIRCRAFT TYPE

PAGE 2 OF 3

ACTIVE USE

AIRCRAFT TYPE	TOTAL ACTIVE	CORP- ORATE	BUSI- NESS	PER- SONAL	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	OTHER WORK	COMPUTER CARRIER	AIR TAXI	OTHER	IN- ACTIVE
FIXED WING - TURBOPROP												
2 ENG: 1-12 SEATS												
EST. NO. ACTIVE	4,888	2,997	667	131	81	0	32	0	163	530	286	194
% STD. ERROR	1.4	5.2	16.3	42.0	44.8	0.0	81.7	0.0	29.6	19.3	28.3	
EST. % ACTIVE	96.2											
2 ENG: 13+ SEATS												
EST. NO. ACTIVE	1,206	400	16	21	3	7	13	20	498	126	101	236
% STD. ERROR	4.9	20.7	63.6	65.4	107.3	358.4	250.5	159.4	15.9	43.4	17.4	
EST. % ACTIVE	83.6											
2 ENGINE: TOTAL												
EST. NO. ACTIVE	6,093	3,397	684	152	85	7	46	20	662	656	387	431
% STD. ERROR	1.5	5.2	16.0	37.2	43.2	358.4	92.9	159.4	14.0	17.7	21.4	
EST. % ACTIVE	93.4											
TURBOPROP: OTHER												
EST. NO. ACTIVE	230	15	11	7	1	129	14	2	0	33	17	122
% STD. ERROR	14.2	67.2	83.0	92.5	289.9	3.1	50.0	156.9	0.0	35.1	43.7	
EST. % ACTIVE	65.4											
TURBOPROP: TOTAL												
EST. NO. ACTIVE	6,324	3,412	695	159	86	136	60	21	662	689	404	552
% STD. ERROR	1.5	5.2	15.8	35.8	42.8	17.6	72.0	146.4	14.0	16.9	20.6	
EST. % ACTIVE	92.0											
FIXED WING - TURBOJET												
2 ENGINE: TOTAL												
EST. NO. ACTIVE	4,004	2,935	240	109	25	0	24	14	32	366	260	205
% STD. ERROR	1.4	3.7	23.7	35.6	91.2	0.0	62.5	84.1	66.8	20.1	25.8	
EST. % ACTIVE	95.1											
TURBOJET: OTHER												
EST. NO. ACTIVE	398	259	19	5	0	0	26	0	0	1	87	129
% STD. ERROR	8.2	10.8	78.2	172.7	0.0	0.0	74.7	0.0	0.0	179.2	31.6	
EST. % ACTIVE	75.5											
TURBOJET: TOTAL												
EST. NO. ACTIVE	4,402	3,194	259	114	25	0	50	14	32	367	347	334
% STD. ERROR	1.5	3.5	22.7	34.9	91.2	0.0	49.2	84.1	66.8	20.0	20.9	
EST. % ACTIVE	92.9											

3.1 1989 GENERAL AVIATION NUMBER OF AIRCRAFT BY PRIMARY USE  
BY AIRCRAFT TYPE

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ACTIVE USE

AIRCRAFT TYPE	TOTAL ACTIVE	CORP- ORATE	BUSI- NESS	PER- SONAL	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	OTHER WORK	COMMUTER CARRIER	AIR TAXI	OTHER	IN- ACTIVE
FIXED WING: TOTAL												
EST. NO. ACTIVE	204,541	11,526	36,987	117,992	16,541	6,261	4,165	1,131	1,324	5,486	3,125	41,875
% STD. ERROR	0.5	3.9	2.7	1.1	4.7	3.5	9.3	16.8	11.6	7.0	9.7	
EST. % ACTIVE	83.0											
ROTORCRAFT												
PISTON												
EST. NO. ACTIVE	3,244	44	193	915	551	609	561	132	0	121	118	2,495
% STD. ERROR	1.2	13.6	6.3	2.9	3.3	3.8	3.3	9.2	0.0	10.0	10.9	
EST. % ACTIVE	66.5											
TURBINE												
EST. NO. ACTIVE	4,232	682	223	153	144	223	735	231	21	1,508	311	432
% STD. ERROR	0.4	2.7	5.2	6.8	9.0	6.1	2.6	5.2	12.3	1.6	5.7	
EST. % ACTIVE	90.7											
ROTORCRAFT: TOTAL												
EST. NO. ACTIVE	7,475	727	416	1,068	694	832	1,297	363	21	1,629	429	2,928
% STD. ERROR	0.6	2.7	4.0	2.7	3.2	3.3	2.1	4.7	12.3	1.7	5.1	
EST. % ACTIVE	71.9											
OTHER												
EST. NO. ACTIVE	7,721	33	104	5,725	545	0	322	645	99	0	248	2,585
% STD. ERROR	2.4	75.7	43.3	3.0	16.0	0.0	26.6	18.9	56.2	0.0	24.5	
EST. % ACTIVE	74.9											
TOTAL	219,737	12,285	37,507	124,786	17,780	7,093	5,784	2,139	1,444	7,115	3,802	47,388
EST. NO. ACTIVE	0.5	3.6	2.7	1.0	4.4	3.1	6.8	10.6	11.3	5.4	8.1	
% STD. ERROR	82.3											
EST. % ACTIVE												

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE AIRCRAFT DID NOT REPORT USE.

3.2 1989 GENERAL AVIATION TOTAL HOURS FLOWN BY PRIMARY USE  
BY AIRCRAFT TYPE

PAGE 1 OF 3

PRIMARY USE

AIRCRAFT TYPE	CORP- ORATE	BUSI- NESS	PER- SONAL	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	OTHER WORK	COMMUTER CARRIER	AIR TAXI	OTHER	TOTAL
<b>FIXED WING</b>											
<b>FIXED WING - PISTON</b>											
1 ENG: 1-3 SEATS											
EST. TOT. HOURS	4,894	240,349	2,680,266	3,165,784	1,620,422	353,803	161,822	0	9,331	75,355	8,312,023
% STD. ERROR	58.5	16.0	3.6	9.2	6.0	20.8	25.5	0.0	52.3	24.0	3.9
1 ENG: 4+ SEATS											
EST. TOT. HOURS	318,119	3,068,350	6,384,052	2,502,156	40,253	696,118	130,421	86,055	697,738	71,603	13,994,872
% STD. ERROR	19.5	4.4	3.6	10.1	50.0	17.8	35.0	44.7	16.7	29.7	2.7
1 ENGINE: TOTAL											
EST. TOT. HOURS	323,012	3,308,700	9,064,320	5,667,939	1,660,675	1,049,921	292,243	86,055	707,069	146,958	22,306,894
% STD. ERROR	19.0	4.3	2.7	6.8	6.0	13.8	21.4	44.7	16.2	18.3	2.2
2 ENG: 1-6 SEATS											
EST. TOT. HOURS	296,325	797,540	705,558	373,196	14,853	86,348	3,025	26,064	411,552	3,179	2,717,639
% STD. ERROR	15.4	7.6	10.0	17.7	56.9	42.1	91.3	91.8	19.6	55.4	4.1
2 ENG: 7+ SEATS											
EST. TOT. HOURS	359,069	305,469	173,930	84,084	19,336	22,216	15,716	297,563	639,576	13,429	1,930,388
% STD. ERROR	16.4	16.2	17.5	42.1	40.3	50.8	52.5	23.1	11.8	37.2	5.3
2 ENGINE: TOTAL											
EST. TOT. HOURS	655,393	1,103,009	879,488	457,280	34,190	108,565	18,741	323,626	1,051,128	16,607	4,648,026
% STD. ERROR	11.3	6.9	8.8	16.2	34.6	35.7	43.2	22.7	10.5	30.5	3.3
<b>PISTON: OTHER</b>											
EST. TOT. HOURS	5	1,642	913	0	4,454	0	48	8,938	48	527	16,575
% STD. ERROR	146.1	69.1	111.4	0.0	38.4	0.0	151.9	69.1	104.9	91.8	67.3
<b>PISTON: TOTAL</b>											
EST. TOT. HOURS	978,411	4,413,350	9,944,722	6,125,218	1,699,318	1,158,485	311,033	418,619	1,758,245	164,093	26,971,488
% STD. ERROR	9.9	3.6	2.6	6.4	6.1	12.9	20.3	19.9	9.1	16.9	1.9
<b>FIXED WING - TURBOPROP</b>											
2 ENG: 1-12 SEATS											
EST. TOT. HOURS	941,123	130,481	26,647	20,117	0	12,422	0	259,686	206,394	94,647	1,691,517
% STD. ERROR	6.7	17.7	43.0	53.4	0.0	83.5	0.0	29.2	20.5	31.8	5.1



3.2 1989 GENERAL AVIATION TOTAL HOURS FLOWN BY PRIMARY USE  
BY AIRCRAFT TYPE

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PRIMARY USE

AIRCRAFT TYPE	CORPORATE	BUSINESS	PERSONAL	INSTRUCTIONAL	AERIAL APPL	AERIAL OBS	OTHER WORK	COMMUTER CARRIER	AIR TAXI	OTHER	TOTAL
2 ENG: 13+ SEATS											
EST. TOT. HOURS	348,163	13,479	14,952	3,608	4,511	4,418	17,017	801,519	71,623	34,875	1,314,165
% STD. ERROR	20.9	62.7	71.5	107.3	358.4	250.6	125.5	18.0	46.5	21.2	9.8
2 ENGINE: TOTAL											
EST. TOT. HOURS	1,289,286	143,960	41,599	23,725	4,511	16,840	17,017	1,061,206	278,016	129,522	3,005,682
% STD. ERROR	6.1	17.0	36.2	49.6	358.4	93.6	125.5	15.4	18.7	24.4	5.2
TURBOPROP: OTHER											
EST. TOT. HOURS	3,196	641	520	4,459	82,533	12,488	915	0	18,792	2,736	126,279
% STD. ERROR	70.2	82.5	98.9	289.9	14.4	53.4	156.9	0.0	40.6	51.0	16.6
TURBOPROP: TOTAL											
EST. TOT. HOURS	1,292,482	144,602	42,119	28,184	87,044	29,328	17,932	1,061,206	296,808	132,257	3,131,961
% STD. ERROR	6.1	16.8	35.1	47.9	22.2	70.8	117.2	15.4	17.9	23.6	5.0
FIXED WING - TURBOJET											
2 ENGINE: TOTAL											
EST. TOT. HOURS	1,100,014	65,819	28,631	969	0	9,745	3,031	8,593	215,755	109,599	1,542,156
% STD. ERROR	4.7	24.9	44.2	71.3	0.0	62.5	94.5	80.7	25.2	27.6	3.9
TURBOJET: OTHER											
EST. TOT. HOURS	94,912	6,097	357	0	0	5,852	0	0	472	4,251	111,940
% STD. ERROR	13.1	78.6	172.7	0.0	0.0	74.7	0.0	0.0	179.2	83.9	12.2
TURBOJET: TOTAL											
EST. TOT. HOURS	1,194,926	71,915	28,988	969	0	15,597	3,031	8,593	216,227	113,850	1,654,096
% STD. ERROR	4.5	23.8	43.3	71.3	0.0	46.6	94.5	80.7	25.1	22.9	3.7
FIXED WING: TOTAL											
EST. TOT. HOURS	3,465,819	4,629,867	10,015,830	6,154,371	1,786,362	1,203,410	331,996	1,488,417	2,271,281	410,200	31,757,544
% STD. ERROR	4.4	3.5	2.6	6.4	5.9	12.6	19.5	11.6	7.9	11.0	1.7
ROTORCRAFT											
PISTON											
EST. TOT. HOURS	12,415	18,161	50,099	226,537	168,395	211,362	28,492	0	20,172	10,323	749,410
% STD. ERROR	32.6	8.8	5.6	4.2	5.2	4.8	17.6	0.0	12.4	14.0	2.1

3.2 1989 GENERAL AVIATION TOTAL HOURS FLOWN BY PRIMARY USE  
BY AIRCRAFT TYPE

PAGE 3 OF 3

AIRCRAFT TYPE	PRIMARY USE										TOTAL
	CORP- ORATE	BUSI- NESS	PER- SONAL	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	OTHER WORK	COMMUTER CARRIER	AIR TAXI	OTHER	
TURBINE											
EST. TOT. HOURS	255,854	35,237	19,768	45,395	68,015	414,086	138,863	14,378	978,686	114,435	2,076,571
% STD. ERROR	3.2	6.3	8.5	10.4	6.8	3.2	6.7	14.6	1.9	6.5	0.9
ROTORCRAFT: TOTAL											
EST. TOT. HOURS	268,269	53,397	69,867	271,932	236,410	625,449	167,354	14,378	998,858	124,758	2,825,981
% STD. ERROR	3.4	5.2	4.6	4.0	4.2	2.7	6.4	14.6	2.0	5.9	0.9
OTHER											
EST. TOT. HOURS	5,217	6,023	242,087	63,151	0	32,626	60,283	4,798	0	14,497	428,680
% STD. ERROR	81.5	46.1	5.9	22.4	0.0	29.4	58.7	59.1	0.0	26.1	7.4
TOTAL											
EST. TOT. HOURS	3,739,305	4,689,287	10,327,786	6,489,455	2,022,772	1,861,485	559,633	1,507,592	3,270,139	549,455	35,012,180
% STD. ERROR	4.2	3.5	2.5	6.1	5.2	8.9	13.5	11.1	6.0	9.0	1.6

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE AIRCRAFT DID NOT REPORT USE.

3.3 1989 GENERAL AVIATION NAUTICAL MILES FLOWN BY PRIMARY USE BY AIRCRAFT TYPE

PAGE 1 OF 2

NAUTICAL MILES (IN THOUSANDS)

AIRCRAFT TYPE	CORP-ORATE	BUSINESS	PERSONAL	INSTRUC-TIONAL	AERIAL APPL	AERIAL OBS	OTHER WORK	COMMUTER CARRIER	AIR TAXI	OTHER	TOTAL
FIXED WING											
FIXED WING - PISTON											
1 ENG: 1-3 SEATS	309	21,565	238,888	251,984	144,472	28,620	14,400	0	754	5,673	706,665
1 ENG: 4+ SEATS	26,127	369,471	745,421	254,733	4,200	73,000	15,071	8,993	73,935	7,015	1,577,966
1 ENGINE: TOTAL	26,436	391,036	984,308	506,717	148,672	101,620	29,472	8,993	74,689	12,688	2,284,631
2 ENG: 1-6 SEATS	39,193	118,629	109,856	38,804	2,447	14,225	509	3,924	61,968	399	389,955
2 ENG: 7+ SEATS	52,280	49,946	29,788	9,626	3,502	4,023	2,912	49,046	105,418	1,862	308,405
2 ENGINE: TOTAL	91,473	168,576	139,644	48,431	5,949	18,249	3,421	52,970	167,386	2,261	698,360
PISTON OTHER	1	343	201	0	1,040	0	12	1,888	10	92	3,588
PISTON TOTAL	117,910	559,955	1,124,153	555,148	155,661	119,869	32,904	63,852	242,085	15,041	2,986,579
FIXED WING - TURBOPROP											
2 ENG: 1-12 SEATS	173,608	28,245	5,083	3,765	0	2,749	0	51,749	41,129	13,179	319,506
2 ENG: 13+ SEATS	63,512	2,827	2,814	661	965	945	3,525	155,945	13,935	4,889	250,019
2 ENGINE: TOTAL	237,120	31,072	7,897	4,425	965	3,694	3,525	207,694	55,064	18,068	569,525
TURBOPROP: OTHER	546	125	92	757	16,414	2,484	177	0	3,408	349	24,350
TURBOPROP: TOTAL	237,666	31,197	7,989	5,182	17,379	6,178	3,702	207,694	58,472	18,417	593,875

3.3 1989 GENERAL AVIATION NAUTICAL MILES FLOWN BY PRIMARY USE BY AIRCRAFT TYPE

PAGE 2 OF 2

NAUTICAL MILES (IN THOUSANDS)

AIRCRAFT TYPE	CORPORATE	BUSINESS	PERSONAL	INSTRUCTIONAL	AERIAL APPL	AERIAL OBS	OTHER WORK	COMMUTER CARRIER	AIR TAXI	OTHER	TOTAL
FIXED WING - TURBOJET											
2 ENGINE: TOTAL	463,021	27,458	11,975	265	0	0	1,168	3,530	88,629	45,683	641,729
TURBOJET: OTHER	45,004	2,873	169	0	0	0	0	0	220	2,006	50,271
TURBOJET: TOTAL	508,025	30,330	12,144	265	0	0	1,168	3,530	88,849	47,689	692,000
FIXED WING: TOTAL	863,601	621,483	1,144,287	560,595	173,040	126,047	37,774	275,076	389,406	81,147	4,272,454
ROTORCRAFT											
PISTON	724	1,163	2,810	11,881	10,367	12,818	1,241	0	1,154	561	42,720
TURBINE	25,914	3,604	2,067	4,147	7,025	42,894	14,204	609	41,105	8,724	150,292
ROTORCRAFT: TOTAL	26,638	4,767	4,877	16,028	17,392	55,712	15,445	609	42,259	9,285	193,012
OTHER	168	134	9,796	1,991	0	0	0	0	0	177	12,267
TOTAL	890,407	626,383	1,158,961	578,614	190,431	181,758	53,219	275,685	431,665	90,609	4,477,734

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

## CHAPTER IV

### FLYING CONDITIONS

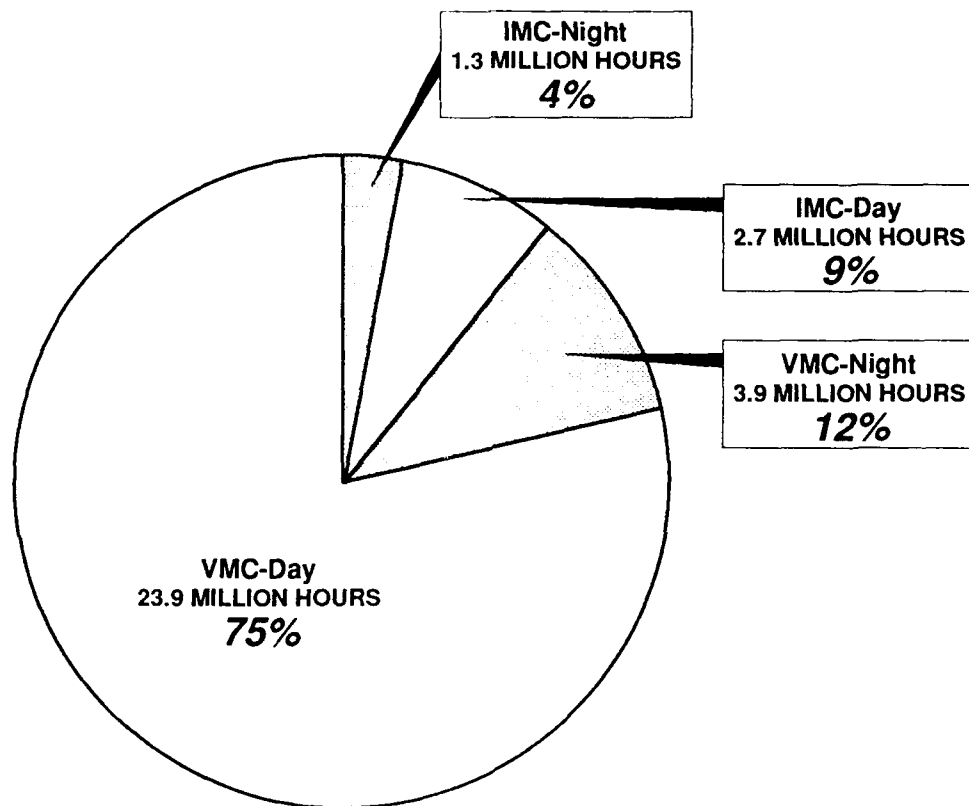
This chapter presents statistics on the meteorological conditions under which the general aviation fleet flies. Data on rotorcraft are not included. Tables 4.1, 4.2, and 4.3 contain the number of general aviation active aircraft and total hours during the day and night by aircraft type, aircraft type under Visual Meteorological Conditions (VMC), and aircraft type under Instrument Meteorological Conditions (IMC), respectively. Table 4.4 considers total day and night hours by region of based aircraft, while Tables 4.5 and 4.6 look at active aircraft and total hours by region under VMC and IMC, respectively. The final two tables in this chapter are breakdowns by SDR Manufacturer/Model (M/M) Group. Table 4.7 gives total hours by SDR M/M Group, and Table 4.8 looks at the total hours under both VMC and IMC conditions by SDR M/M Group.

Figure 4.1, 1989 General Aviation Total Hours Flown By Weather and Light Conditions, graphically depicts the findings of the above listed tables, proportionally showing the number of hours under VMC and IMC conditions by day and by night.

Some highlights of this chapter include:

- o Approximately 83 percent of general aviation flying takes place during the day.
- o Fixed wing, single engine piston aircraft spend 93 percent of their flying time in VMC. Overall, 86 percent of VMC flying takes place during the day.
- o Fixed wing piston aircraft with two engines, turboprops, and turbojets spend a considerable amount of time flying in IMC conditions, approximately 23, 32, and 33 percent, respectively. IMC flying takes place 66 percent of the time during the day.
- o Overall, these tables indicate that in 1989 about 75 percent of the general aviation fleet's total hours were flown in VMC conditions during the day. The remainder of the total hours flown by the general aviation fleet were divided as follows: 12 percent VMC night, 9 percent IMC day, and 4 percent IMC night.

**Figure 4.1**  
**1989 GENERAL AVIATION TOTAL HOURS FLOWN**  
**BY WEATHER AND LIGHT CONDITIONS**



**KEY**

□ = Day

□ = Night

IMC = Instrument Meteorological Conditions

VMC = Visual Meteorological Conditions

**SOURCE:** Tables 4.2 and 4.3

4.1 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
BY DAY/NIGHT BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

AIRCRAFT TYPE	DAY TOTAL				NIGHT TOTAL			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
FIXED WING								
FIXED WING - PISTON								
1 ENG: 1-3 SEATS	62,613	0.0	7,576,589	3.7	23,632	2.8	729,195	8.5
1 ENG: 4+ SEATS	107,671	0.1	11,829,902	2.7	75,371	1.2	2,034,330	4.4
1 ENGINE: TOTAL	170,284	0.0	19,406,490	2.2	99,003	1.2	2,763,525	4.0
2 ENG: 1-6 SEATS	15,864	0.4	2,041,614	3.6	13,746	1.8	647,842	10.3
2 ENG: 7+ SEATS	7,402	0.4	1,400,009	5.1	6,358	2.4	511,728	8.3
2 ENGINE: TOTAL	23,266	0.3	3,441,623	3.0	20,104	1.5	1,159,570	6.8
PISTON: OTHER	86	0.6	11,142	26.1	45	16.9	5,332	52.5
PISTON: TOTAL	193,636	0.0	22,859,256	1.9	119,152	1.0	3,928,429	3.4
FIXED WING - TURBOPROP								
2 ENG: 1-12 SEATS	4,888	0.0	1,198,690	5.2	4,772	1.0	453,387	6.8
2 ENG: 13+ SEATS	1,206	0.0	809,417	9.9	1,071	2.6	463,529	10.5
2 ENGINE: TOTAL	6,093	0.0	2,008,108	5.0	5,844	0.9	916,915	6.3
TURBOPROP: OTHER	204	6.2	96,781	15.2	116	15.9	29,607	30.6
TURBOPROP: TOTAL	6,298	0.2	2,104,888	4.9	5,960	0.9	946,522	6.1

4.1 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
BY DAY/NIGHT BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

AIRCRAFT TYPE	DAY TOTAL				NIGHT TOTAL			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
FIXED WING - TURBOJET								
2 ENGINE: TOTAL	3,972	0.7	1,087,522	3.7	3,885	1.1	445,479	6.8
TURBOJET: OTHER	398	0.1	80,877	9.0	324	8.5	30,589	16.1
TURBOJET: TOTAL	4,370	0.7	1,168,399	3.5	4,209	1.2	476,069	6.5
FIXED WING: TOTAL	204,303	0.0	26,132,544	1.7	129,321	0.9	5,351,019	2.8
ROTORCRAFT								
PISTON	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TURBINE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ROTORCRAFT: TOTAL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OTHER	7,721	0.0	427,567	6.9	147	39.6	3,071	69.8
TOTAL	212,025	0.0	26,560,114	1.7	129,468	0.9	5,354,090	2.8

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.



4.2 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN UNDER VMC CONDITIONS  
BY DAY/NIGHT BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 2

AIRCRAFT TYPE	VMC DAY				VMC NIGHT				VMC TOTAL			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
FIXED WING												
FIXED WING - PISTON												
1 ENG: 1-3 SEATS	62,606	0.0	7,504,679	3.7	23,564	2.8	706,019	8.7	62,610	0.0	8,212,746	3.8
1 ENG: 4+ SEATS	107,533	0.1	10,775,620	2.7	73,765	1.3	1,678,265	4.5	107,671	0.1	12,460,863	2.6
1 ENGINE: TOTAL	170,139	0.1	18,280,300	2.2	97,329	1.2	2,384,284	4.1	170,281	0.0	20,673,612	2.2
2 ENG: 1-6 SEATS	15,817	0.4	1,681,119	3.9	12,999	2.2	436,548	10.3	15,879	0.2	2,119,636	3.9
2 ENG: 7+ SEATS	7,255	1.0	1,093,860	5.8	5,867	3.2	312,706	9.2	7,278	0.9	1,407,465	5.3
2 ENGINE: TOTAL	23,071	0.4	2,774,979	3.3	18,866	1.8	749,255	7.1	23,158	0.3	3,527,102	3.2
PISTON: OTHER	69	11.4	7,375	35.8	45	16.9	4,248	56.7	69	11.4	11,771	42.3
PISTON: TOTAL	193,280	0.1	21,062,654	2.0	116,240	1.0	3,137,788	3.5	193,508	0.0	24,212,484	1.9
FIXED WING - TURBOPROP												
2 ENG: 1-12 SEATS	4,777	1.1	862,500	5.3	4,375	2.4	267,797	8.2	4,777	1.1	1,129,889	5.0
2 ENG: 13+ SEATS	1,087	3.4	562,961	13.2	955	4.3	277,213	15.6	1,087	3.4	840,018	13.3
2 ENGINE: TOTAL	5,864	1.1	1,425,461	6.1	5,330	2.1	545,009	8.9	5,864	1.1	1,969,908	6.4
TURBOPROP: OTHER	203	6.2	91,197	16.0	115	16.4	14,094	52.2	229	2.0	105,221	17.9
TURBOPROP: TOTAL	6,066	1.1	1,516,658	5.8	5,444	2.1	559,103	8.8	6,092	1.0	2,075,129	6.1

4.2 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN UNDER VMC CONDITIONS  
BY DAY/NIGHT BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 2

AIRCRAFT TYPE	VMC DAY				VMC NIGHT				VMC TOTAL			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
FIXED WING - TURBOJET												
2 ENGINE: TOTAL	3,533	2.2	773,674	5.0	3,356	2.6	260,287	7.9	3,572	2.1	1,033,150	4.6
TURBOJET: OTHER	341	7.5	57,874	12.6	248	12.5	19,679	23.6	341	7.5	77,553	14.1
TURBOJET: TOTAL	3,875	2.1	831,548	4.8	3,604	2.5	279,966	7.5	3,913	2.0	1,110,704	4.4
FIXED WING: TOTAL	203,221	0.1	23,410,862	1.8	125,289	1.0	3,976,857	3.1	203,513	0.1	27,398,324	1.8
ROTORCRAFT												
PISTON	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TURBINE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ROTORCRAFT: TOTAL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OTHER	7,659	0.6	425,972	6.9	146	39.9	3,060	70.0	7,659	0.6	429,104	7.3
TOTAL	210,880	0.1	23,836,834	1.8	125,435	1.0	3,979,917	3.1	211,172	0.1	27,827,424	1.7

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

4.3 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN UNDER IMC CONDITIONS  
BY DAY/NIGHT BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 2

AIRCRAFT TYPE	IMC DAY				IMC NIGHT				IMC TOTAL			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
FIXED WING												
FIXED WING - PISTON												
1 ENG: 1-3 SEATS	3,602	10.2	71,027	17.5	1,710	15.3	23,722	27.6	3,715	10.0	94,056	17.9
1 ENG: 4+ SEATS	46,570	2.1	1,051,595	6.2	23,262	3.7	358,852	7.8	47,025	2.1	1,407,673	6.2
1 ENGINE: TOTAL	50,172	2.1	1,122,622	5.9	24,972	3.6	382,574	7.5	50,740	2.1	1,501,729	5.9
2 ENG: 1-6 SEATS	12,080	2.6	354,908	5.7	9,247	3.9	209,708	12.1	12,223	2.5	564,521	6.6
2 ENG: 7+ SEATS	6,142	2.5	307,055	8.4	5,282	3.9	200,589	10.8	6,181	2.5	507,898	8.1
2 ENGINE: TOTAL	18,222	1.9	661,964	4.9	14,529	2.8	410,296	8.1	18,404	1.9	1,072,419	5.2
PISTON: OTHER	63	13.5	3,589	32.9	32	10.6	1,084	36.4	63	13.5	4,675	25.8
PISTON: TOTAL	68,457	1.6	1,788,175	4.1	39,533	2.5	793,955	5.5	69,207	1.6	2,578,822	4.0
FIXED WING - TURBOPROP												
2 ENG: 1-12 SEATS	4,807	0.9	337,402	12.0	4,657	1.5	186,354	10.0	4,827	0.8	523,449	10.5
2 ENG: 13+ SEATS	1,159	2.2	246,691	13.7	1,050	3.6	186,316	15.4	1,163	2.2	432,952	13.5
2 ENGINE: TOTAL	5,965	0.9	584,093	9.0	5,707	1.4	372,671	9.2	5,990	0.8	956,402	8.4
TURBOPROP: OTHER	71	21.8	5,654	35.5	73	16.9	15,534	38.9	103	11.2	21,083	30.4
TURBOPROP: TOTAL	6,037	0.9	589,747	8.9	5,780	1.4	388,205	9.0	6,093	0.8	977,485	8.2

4.3 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN UNDER IMC CONDITIONS  
B. DAY/NIGHT BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 2

AIRCRAFT TYPE	IMC DAY				IMC NIGHT				IMC TOTAL			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
FIXED WING - TURBOJET												
2 ENGINE: TOTAL	3,767	1.7	315,205	7.9	3,678	1.9	186,285	9.1	3,803	1.5	500,540	7.7
TURBOJET: OTHER	369	4.8	23,439	23.8	312	9.1	11,076	21.7	369	4.8	34,515	22.0
TURBOJET: TOTAL	4,136	1.6	338,644	7.5	3,990	1.9	197,360	8.7	4,172	1.4	535,054	7.3
FIXED WING: TOTAL	78,629	1.4	2,716,566	3.5	49,303	2.0	1,379,520	4.2	79,472	1.4	4,091,362	3.4
ROTORCRAFT												
PISTON	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TURBINE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ROTORCRAFT: TOTAL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OTHER	84	57.9	1,692	63.0	14	68.5	10	76.0	85	57.1	1,703	62.6
TOTAL	78,713	1.4	2,718,258	3.5	49,317	2.0	1,379,530	4.2	79,557	1.4	4,093,064	3.4

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

4.4 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
BY DAY/NIGHT BY REGION OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

REGION	DAY TOTAL				NIGHT TOTAL			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
ALASKAN	6,230	6.6	745,613	11.6	2,142	11.7	76,074	27.0
CENTRAL	11,610	5.7	1,435,296	9.1	7,118	7.4	279,722	14.7
EASTERN	24,299	3.8	2,730,144	7.9	15,336	4.9	701,224	17.3
GREAT LAKES	38,663	2.9	4,246,722	4.7	24,603	3.8	1,008,073	7.8
NEW ENGLAND	9,098	6.4	1,088,088	9.9	5,313	8.5	246,332	21.0
NORTHWEST MT.	20,788	4.1	2,307,061	6.5	11,453	5.7	415,350	12.5
SOUTHERN	35,452	3.0	5,224,613	6.0	23,221	3.8	986,874	8.7
SOUTHWESTERN	29,710	3.4	4,291,077	7.5	17,695	4.5	830,622	12.6
WESTERN-PACIFIC	36,152	3.0	4,471,625	6.1	22,739	3.9	816,155	10.1
TOTAL	212,002	1.2	26,540,208	2.4	129,622	1.7	5,360,428	4.3

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

4.5 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN UNDER VMC CONDITIONS  
BY DAY/NIGHT BY REGION OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 1

REGION	VMC DAY			VMC NIGHT			VMC TOTAL		
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN
ALASKAN	6,163	6.7	710,088	2,097	11.9	54,995	6,223	6.6	764,779
CENTRAL	11,552	5.7	1,314,565	6,999	7.5	219,732	11,552	5.7	1,533,480
EASTERN	24,180	3.8	2,374,352	14,842	5.0	527,007	24,200	3.8	2,901,164
GREAT LAKES	38,385	2.9	3,717,349	23,619	3.9	720,840	38,447	2.9	4,439,634
NEW ENGLAND	9,073	6.4	951,779	5,156	8.7	154,483	9,119	6.4	1,108,657
NORTHWEST MT.	20,646	4.1	2,102,456	11,034	5.9	305,993	20,669	4.1	2,413,507
SOUTHERN	35,104	3.0	4,649,654	22,463	3.9	746,384	35,113	3.0	5,401,322
SOUTHWESTERN	29,608	3.4	3,878,897	16,980	4.6	570,284	29,611	3.4	4,452,294
WESTERN-PACIFIC	36,139	3.0	4,075,157	22,417	3.9	660,476	36,214	3.0	4,736,429
TOTAL	210,852	1.3	23,774,278	125,606	1.7	3,960,190	211,149	1.3	27,751,282
									2.5

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

4.6 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN UNDER IMC CONDITIONS  
BY DAY/NIGHT BY REGION OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 1

REGION	IMC DAY			IMC NIGHT			IMC TOTAL		
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN
ALASKAN	576	23.2	35,573	193	33.1	21,150	576	23.2	56,711
CENTRAL	3,893	9.7	126,486	2,494	12.0	61,494	3,958	9.6	184,774
EASTERN	10,513	5.8	355,156	6,420	7.2	174,533	10,646	5.7	529,585
GREAT LAKES	15,291	4.7	529,261	10,188	5.7	288,569	15,374	4.7	816,454
NEW ENGLAND	3,403	10.5	135,712	2,173	12.9	91,667	3,473	10.4	227,100
NORTHWEST MT.	5,903	7.9	198,298	3,324	10.3	108,738	5,975	7.8	306,935
SOUTHERN	15,895	4.5	570,796	10,935	5.3	240,046	16,072	4.5	810,466
SOUTHWESTERN	10,817	5.6	415,174	6,806	7.0	260,282	10,866	5.6	676,069
WESTERN-PACIFIC	12,440	5.2	397,091	6,918	6.9	159,585	12,613	5.2	554,414
TOTAL	78,732	2.1	2,763,547	49,452	2.6	1,406,063	79,551	2.1	4,162,510
			5.0			6.9			5.3

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

4.7 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
BY DAY/NIGHT BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	DAY				NIGHT			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
OTHER 1	10,580	0.0	656,322	10.8	1,534	17.6	18,174	45.4
OTHER 2	1,415	0.0	161,695	19.8	773	14.2	16,341	27.5
OTHER 3	163	10.4	25,720	37.1	23	189.2	2,796	196.2
OTHER 4	237	0.2	26,190	39.9	93	78.6	3,197	111.5
OTHER 5	30	1.6	5,618	41.4	30	1.6	4,961	56.2
OTHER 6	364	0.1	172,857	26.3	364	0.1	63,883	21.7
OTHER 7	293	0.2	226,621	28.4	293	0.2	154,212	25.6
OTHER 8	57	0.9	12,443	23.3	40	19.7	6,472	56.1
OTHER 9	366	0.1	93,564	13.7	356	4.4	30,878	15.6
OTHER 10	185	0.3	28,218	23.1	121	22.6	10,806	40.6
OTHER 13	2,549	0.0	142,160	17.5	55	69.4	1,374	128.2
ADAMS A50S	112	0.4	2,405	20.8	4	129.0	1	122.6
AIRPTSA	131	0.4	15,946	23.5	0	0.0	0	0.0
AIRTRCAT300	403	0.1	142,496	8.1	26	79.3	2,589	92.7
AIRTRCAT400	60	0.8	20,669	20.8	8	123.7	1,709	132.4
AIRTRCAT500	37	1.3	16,434	14.5	20	35.7	1,915	58.5
AMD FALC10	121	0.4	32,247	9.4	121	0.4	14,841	18.0
AMD FALC20	182	0.3	53,148	9.6	178	3.9	19,065	21.8
AMD FALC50	102	0.5	29,925	9.4	102	0.5	12,409	14.7
AMTR TMK	14	3.5	193	32.5	0	0.0	0	0.0
ARCTICS1A	49	1.0	2,302	20.3	4	90.7	41	90.5
ARCTICS1B1	14	3.5	608	32.3	1	103.3	2	103.9



4.7 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
BY DAY/NIGHT BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	DAY				NIGHT			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
ARONCA15	135	0.4	8,475	15.4	61	19.4	726	61.2
ARONCA58	60	0.8	2,600	24.4	2	132.5	0	0.0
ARONCA65	97	0.5	3,864	45.5	0	0.0	0	0.0
ARONCAC3	13	3.6	190	19.2	0	0.0	0	0.0
AVIANWEALCON	5	8.5	84	4.8	0	0.0	0	0.0
AVIANWSKYHWK	37	1.3	1,461	22.1	1	140.2	3	146.6
AYRES S2	757	0.1	305,795	11.2	300	26.7	43,303	42.2
BAG B206	14	3.4	739	46.9	5	78.6	86	76.5
BAG DH125	73	0.7	21,034	13.3	73	0.7	7,321	15.2
BALWKSFIREFY	1,421	0.0	50,589	13.0	0	0.0	0	0.0
BBAVIA11	542	0.1	22,112	19.2	98	48.3	407	51.2
BBAVIA7	2,131	0.0	116,885	13.0	193	43.4	4,348	58.6
BBAVIA8	178	0.3	25,346	30.6	32	43.8	625	56.5
BEECH 100	229	0.2	45,969	14.5	220	5.1	16,333	18.2
BEECH 17	88	0.6	4,215	13.8	21	40.5	162	51.4
BEECH 18	478	0.1	120,397	24.0	320	18.3	64,599	28.1
BEECH 1900	106	0.5	94,224	31.0	106	0.5	54,146	22.5
BEECH 200	809	0.1	226,578	9.5	807	1.1	93,000	15.7
BEECH 23	2,583	0.0	269,336	14.8	1,928	6.3	53,393	20.0
BEECH 300	163	0.3	50,720	7.3	163	0.3	8,844	13.3
BEECH 33	1,928	0.0	217,005	11.2	1,385	6.1	43,838	13.2
BEECH 35	6,300	0.0	511,810	6.6	4,268	5.8	98,001	16.4

4.7 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
BY DAY/NIGHT BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	DAY				NIGHT			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
BEECH 36	2,288	0.0	267,455	8.3	1,759	6.4	35,893	13.9
BEECH 45	230	0.2	24,332	13.4	136	14.6	3,621	32.5
BEECH 50	142	0.4	14,355	25.9	74	46.5	1,267	53.5
BEECH 55	2,024	0.0	198,075	9.3	1,790	4.9	91,289	41.1
BEECH 56	49	6.1	2,517	21.6	34	15.4	4,606	50.7
BEECH 58	1,496	0.0	289,443	9.7	1,399	3.9	150,487	26.1
BEECH 60	377	0.1	44,348	16.4	359	8.0	10,891	36.8
BEECH 65	85	0.6	32,613	34.1	17	126.6	892	133.5
BEECH 76	277	0.2	43,458	13.8	257	4.9	9,546	28.8
BEECH 77	232	0.2	59,419	14.5	189	8.7	9,434	28.1
BEECH 80	142	0.4	20,555	82.3	63	51.3	4,196	64.7
BEECH 90	997	0.1	242,315	7.8	970	2.9	84,553	16.4
BEECH 95	436	0.1	35,950	13.0	380	7.0	6,101	32.6
BEECH 99	100	0.5	66,895	47.8	43	53.9	12,982	57.8
BLANCA11	50	1.0	2,356	13.1	1	95.9	12	94.3
BLANCA1413	105	0.5	5,240	17.9	57	19.5	1,165	49.2
BLANCA1413	204	0.2	9,355	28.2	41	63.8	460	86.4
BLANCA17	954	0.1	61,035	10.7	769	7.2	15,971	21.1
BLANCA7	1,862	0.4	158,256	17.4	582	15.9	8,113	26.6
BLANCA8	403	0.1	22,094	15.7	231	20.6	1,715	59.2
BNORM BN2	52	0.9	28,984	17.2	34	23.8	5,975	35.7
BOEING727	22	2.2	6,653	0.0	22	2.2	739	0.1

4.7 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
BY DAY/NIGHT BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	DAY				NIGHT			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
BOEING75	845	0.1	46,185	15.2	4	194.8	98	206.6
BRAERODH125	115	0.4	31,292	10.5	115	0.4	9,848	20.0
BRASOVIS28	46	1.1	3,221	16.3	0	0.0	0	0.0
BRWSTFLEET2	10	4.8	154	19.4	0	0.0	0	0.0
BRWSTFLEET7	9	5.2	235	42.0	0	0.0	0	0.0
BUKER 131	18	2.7	1,123	31.0	0	0.0	0	0.0
CAMRONMODELO	30	1.6	1,770	9.3	1	82.0	6	75.9
CAMRONMODELO	184	0.3	5,213	21.4	0	0.0	0	0.0
CASA C212	33	1.5	8,470	18.0	22	33.5	4,830	43.2
CESSNA120	668	0.1	41,480	16.6	227	31.1	2,210	39.7
CESSNA140	1,637	0.0	99,689	9.0	900	11.4	11,864	40.6
CESSNA150	15,697	0.0	2,933,066	7.6	10,332	4.4	444,673	12.3
CESSNA170	1,948	0.0	130,843	15.2	967	15.3	11,964	31
CESSNA172	23,060	0.0	3,126,009	5.9	17,238	2.7	568,698	9.1
CESSNA175	956	0.1	46,175	19.1	614	13.7	4,388	26.2
CESSNA177	2,686	0.0	213,567	10.2	1,901	7.6	26,654	25.4
CESSNA180	2,490	0.0	194,183	9.4	1,199	12.4	24,707	34.0
CESSNA182	12,755	0.5	1,232,464	5.4	9,243	3.7	179,487	12.0
CESSNA185	1,321	0.0	196,678	13.5	479	17.2	8,179	32.7
CESSNA188	1,459	0.0	309,405	12.6	170	51.1	12,898	73.6
CESSNA190	63	0.8	3,579	14.4	32	18.8	618	38.9
CESSNA195	376	0.1	17,136	8.7	148	16.0	1,315	27.7

4.7 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
BY DAY/NIGHT BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

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MANUFACTURER/ MODEL GROUP	DAY				NIGHT			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
CESSNA205	215	3.9	19,818	17.9	157	13.1	3,102	33.8
CESSNA206	2,387	0.0	374,843	12.6	1,609	9.2	41,360	20.3
CESSNA207	106	0.5	50,494	20.8	92	18.5	8,686	49.1
CESSNA208	75	16.8	33,220	44.0	95	8.9	38,492	27.6
CESSNA210	5,633	0.0	673,161	9.8	4,261	5.4	148,303	21.7
CESSNA303	156	0.3	50,880	26.0	150	5.7	8,565	27.6
CESSNA305	219	0.2	17,501	27.2	100	23.0	983	57.8
CESSNA310	2,717	0.0	310,310	10.5	2,289	5.9	82,037	19.3
CESSNA320	287	0.2	32,527	9.7	226	6.0	6,898	19.2
CESSNA335	43	1.1	5,568	18.8	37	10.3	1,018	25.3
CESSNA336	43	1.2	2,585	15.7	18	29.4	362	35.1
CESSNA337	1,021	0.0	75,271	12.6	845	6.1	14,614	19.5
CESSNA340	872	0.1	104,929	10.8	796	5.8	28,922	16.1
CESSNA401	214	0.2	20,809	26.5	211	3.9	18,830	48.5
CESSNA402	442	2.9	152,408	14.3	432	4.4	58,715	21.3
CESSNA404	121	0.4	28,240	21.8	115	13.0	22,334	28.8
CESSNA411	53	0.9	2,898	34.8	44	17.2	584	41.2
CESSNA414	748	0.1	134,917	9.0	711	3.5	45,191	19.0
CESSNA421	1,146	0.0	136,446	17.6	1,059	5.7	45,263	22.8
CESSNA425	182	0.3	34,019	15.7	179	3.6	13,177	28.6
CESSNA441	220	0.2	47,171	9.4	214	4.1	17,547	17.6
CESSNA500	525	5.4	165,132	13.6	557	0.1	98,668	23.7

4.7 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
BY DAY/NIGHT BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	DAY				NIGHT			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
CESSNA501	258	0.2	59,482	12.4	244	5.6	16,218	19.7
CESSNA650	141	0.4	53,830	12.8	141	0.4	20,818	14.4
CESSNA750	19	2.6	468	23.8	3	76.1	79	90.6
CESSNAUC94	16	3.0	326	33.1	0	0.0	0	0.0
CHILD S1	55	0.9	4,258	16.5	0	0.0	0	0.0
CHILD S2	151	0.3	11,826	13.1	0	0.0	0	0.0
CHRIS HUSKY	49	1.0	4,601	17.5	23	21.8	319	35.2
CNDALRCL600	116	0.4	29,229	12.9	116	0.4	9,916	16.3
CNTRAR101	34	1.4	2,524	21.4	0	0.0	0	0.0
COMWTH185	47	1.1	1,597	39.0	10	66.5	18	71.9
CONAERLA4	421	0.1	33,650	12.6	206	18.0	2,101	24.6
CURTISJR	4	11.9	26	11.4	0	0.0	0	0.0
CURTISROBIN	4	11.1	30	24.1	0	0.0	0	0.0
CURTISTRVAIR	36	1.4	3,018	22.9	5	69.6	25	69.6
CVAC 240	3	12.6	257	23.2	3	12.6	358	65.4
CVAC 340	3	15.0	0	0.0	3	15.0	0	0.0
CVAC BT13	31	1.6	2,150	30.4	1	123.8	2	128.0
CVAC L13	3	15.0	53	16.4	1	83.7	2	82.7
CVAC STC580	39	1.3	11,488	11.9	39	1.3	9,612	31.0
DART G	3	13.6	58	28.6	0	0.0	0	0.0
DHAV DHC1	66	0.8	3,886	29.0	2	147.4	7	156.5
DHAV DHC2	174	0.3	66,758	17.7	52	31.0	684	44.3

4.7 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
BY DAY/NIGHT BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	DAY				NIGHT			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
DHAV DHC3	38	1.3	12,803	13.6	1	257.0	5	307.1
DHAV DHC4	4	12.3	259	0.2	4	12.3	65	0.8
DHAV DHC6	94	0.5	63,296	12.3	67	14.1	34,189	21.8
DHAV DHC8	25	2.0	6,878	10.6	13	69.1	59	68.1
DHAVXDH82	51	1.0	1,313	36.4	0	0.0	0	0.0
DORNERD0228	32	1.5	30,588	17.5	32	1.5	25,332	35.3
DOUG A26	14	3.5	192	19.7	7	43.5	63	64.0
DOUG DC3	260	2.7	39,873	12.5	174	11.4	18,023	21.3
DOUG DC4	55	0.9	5,524	31.6	14	51.5	371	74.9
EAGLE DW	54	0.9	11,918	13.1	17	59.3	63	59.4
EAGLEBAX7	17	2.8	673	19.9	0	0.0	0	0.0
EAGLEBC7	65	0.8	2,136	13.3	7	65.4	0	0.0
EIRVON20	106	0.5	6,941	13.0	0	0.0	0	0.0
EMB 110	70	0.7	84,046	4.6	70	0.7	71,128	19.3
EMB 120	50	1.0	59,827	17.0	50	1.0	32,862	14.7
FLEET 16B	13	3.7	519	18.8	0	0.0	0	0.0
FOKKERF27	18	2.7	9,093	0.0	0	0.0	0	0.0
FRCHLD22	9	5.1	169	24.0	0	0.0	0	0.0
FRCHLD24	108	0.5	4,114	18.2	5	101.5	69	109.2
FRCHLDF27	17	2.8	3,593	40.4	10	36.4	600	40.1
FRCHLDM62	111	0.4	4,084	21.2	7	98.6	35	114.2
GALAXYGX7	43	1.1	1,342	20.0	2	91.0	3	92.9

4.7 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
BY DAY/NIGHT BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	DAY				NIGHT			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
GENBALAX6	27	1.8	1,092	41.7	0	0.0	0	0.0
GLASER300	12	4.1	678	21.5	0	0.0	0	0.0
GLASER400	34	1.4	1,777	22.5	0	0.0	0	0.0
GLASFL201	29	1.7	1,147	13.2	0	0.0	0	0.0
GLASFLH301	80	0.6	3,674	21.8	0	0.0	0	0.0
GROB 103CAT	54	0.9	5,757	27.9	0	0.0	0	0.0
GROB 109	64	0.8	5,076	9.9	10	36.2	100	48.9
GROB ASTIR	51	1.0	3,081	17.8	0	0.0	0	0.0
GRTLKS2T1	107	0.5	4,236	24.9	14	69.6	25	107.5
GRUMANS16	22	2.2	2,568	29.1	11	48.2	212	41.5
GRUMAVAA1	460	0.1	36,089	17.4	346	12.6	5,798	45.9
GRUMAVAA5	975	0.1	81,233	12.7	782	8.3	8,160	25.8
GRUMAVG1159	26	1.9	6,642	12.1	26	1.9	1,755	22.0
GRUMAVG164	1,014	0.0	394,199	11.9	43	108.8	7,165	126.2
GRUMAVG21	51	1.0	5,573	32.1	23	43.6	173	67.2
GRUMAVTBM	26	1.9	985	19.6	2	78.8	30	89.0
GULSTM112	544	0.1	32,056	11.9	445	8.7	10,049	20.2
GULSTM500	297	0.2	37,681	33.1	264	11.6	10,118	124.3
GULSTM520	34	1.5	1,552	24.1	26	28.8	1,210	42.1
GULSTM560	90	0.6	7,622	30.8	67	28.6	652	33.2
GULSTM680	253	10.1	29,287	28.3	256	9.0	34,840	52.7
GULSTM680TP	88	0.6	8,118	17.7	78	9.3	2,618	21.3

4.7 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
BY DAY/NIGHT BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	DAY				NIGHT			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
GULSTM690TC	25	2.0	5,065	8.8	25	2.0	2,469	16.2
GULSTM690TP	384	0.1	58,141	23.0	374	4.6	18,963	34.4
GULSTMAA1	472	1.4	32,177	18.8	268	18.6	3,342	46.8
GULSTMAA5	569	0.1	41,342	9.2	397	12.3	5,840	29.1
GULSTMG1159	220	0.2	53,086	12.5	218	2.7	19,338	20.4
GULSTMG159	71	0.7	21,046	16.4	69	4.7	9,457	20.1
GULSTMG44	76	0.7	7,886	33.2	36	26.8	605	53.5
GULSTMG73	11	4.5	4,336	54.2	3	68.6	86	65.0
GULSTMGA7	49	1.0	8,911	26.1	49	1.0	1,544	21.9
HELIO H295	85	0.6	11,737	18.0	47	20.6	595	42.0
HELIO H391	20	2.5	579	49.6	10	53.4	55	54.5
HSPAVNHA200	19	2.6	411	26.2	0	0.0	0	0.0
HWKSLYDH104	17	2.9	1,031	19.2	0	0.0	0	0.0
HWKSLYDH125	182	0.3	46,895	14.1	182	0.3	19,446	24.8
INTRCP200	27	1.8	2,106	43.4	17	29.1	64	28.1
ISRAEL1121	85	0.6	8,234	15.3	85	0.6	6,540	27.8
ISRAEL1123	22	2.2	2,775	16.2	22	2.2	957	27.6
ISRAEL1124	206	0.2	53,873	9.2	206	0.2	30,504	14.2
JBMSTRDGA15	45	1.1	2,826	23.2	5	73.6	50	91.6
LEAR 23	37	1.3	10,455	40.0	29	37.9	2,563	43.9
LEAR 24	166	0.3	31,623	17.2	161	4.1	17,148	31.1
LEAR 25	237	0.2	46,027	11.1	216	8.9	27,705	22.8



4.7 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
BY DAY/NIGHT BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	DAY				NIGHT			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
LEAR 35	410	0.1	159,649	14.2	377	7.3	47,032	25.0
LEAR 55	101	0.5	34,155	10.5	101	0.5	12,146	18.4
LET L13	130	0.4	14,284	22.1	0	0.0	0	0.0
LKHEED1329	77	0.6	15,895	10.8	77	0.6	6,634	20.1
LKHEED18	54	0.9	1,152	17.9	0	0.0	0	0.0
LKHEEDP2V	26	1.9	234	7.7	0	0.0	0	0.0
LKHEEDT33	12	4.0	186	45.1	2	118.7	2	117.6
LUSCOM8	1,154	0.0	64,335	11.8	77	54.8	301	99.2
MARTIN404	2	17.8	231	0.2	0	0.0	0	0.0
MAULE M4	163	0.3	8,571	17.0	88	28.2	454	36.6
MAULE M5	293	0.2	39,522	37.9	98	33.6	926	46.3
MAULE M6	68	0.7	6,388	38.0	21	55.5	279	68.2
MCLISHFUNKB	64	0.8	2,520	19.0	10	58.9	56	74.1
MEYERSOTW	29	1.7	1,215	21.8	0	0.0	0	0.0
MNCOP90	16	3.0	378	12.8	0	0.0	0	0.0
MNMITEM18	61	0.8	1,556	15.8	2	107.0	11	108.1
MOONEYM20	5,709	0.0	474,483	5.7	4,758	4.0	88,768	12.4
MRCHTIS205	24	2.1	849	23.3	10	42.6	56	51.4
MTSBSIMU2	282	0.2	68,489	17.8	276	5.3	20,701	35.3
MTSBSIMU300	75	0.7	15,506	20.4	72	5.4	4,896	16.3
MULTECD16	23	2.1	866	24.6	12	37.9	126	73.5
NAMER B25	10	3.8	541	38.5	4	74.5	7	73.3

4.7 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
BY DAY/NIGHT BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	DAY			NIGHT		
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR
NAMER F51	81	0.6	4,839	16.1	9	59.9
NAMER NA260	107	0.5	5,044	10.9	27	28.2
NAMER T6	475	0.1	32,342	12.6	138	26.7
NATBAL752	33	1.5	987	25.3	0	0.0
NAVAL N3N	52	1.0	1,579	27.6	0	0.0
NAVIONNAVION	395	0.1	33,003	23.9	291	15.0
NORD 3202	6	8.2	150	13.7	0	0.0
NORD SV4	29	1.7	1,430	29.9	0	0.0
NORWST65	23	2.1	781	16.2	0	0.0
PARTENP68	31	1.6	8,796	10.7	27	7.1
PICARDAX6	43	1.1	857	25.2	0	0.0
PILATSB4	24	2.0	3,289	34.5	0	0.0
PIPER 600	341	0.1	38,156	15.4	302	9.0
PIPER J2	18	2.7	359	20.0	0	0.0
PIPER J3	2,332	0.0	132,835	19.5	100	51.1
PIPER J4	84	0.6	4,218	20.2	2	137.1
PIPER J5	193	0.3	12,614	24.4	11	49.7
PIPER PA12	848	0.1	57,603	29.1	206	31.9
PIPER PA14	8	6.1	311	18.7	0	0.0
PIPER PA15	111	0.4	7,697	52.9	14	56.3
PIPER PA16	196	0.3	8,353	15.6	41	38.9
PIPER PA17	67	0.7	2,769	19.3	3	140.0
					9	145.7

4.7 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
BY DAY/NIGHT BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	DAY				NIGHT			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
PIPER PA18	3,001	0.0	314,934	10.8	903	12.3	23,505	39.3
PIPER PA20	190	0.3	15,246	30.5	105	22.7	1,289	48.0
PIPER PA22	3,251	0.2	141,138	10.4	1,106	16.2	8,041	30.9
PIPER PA23	2,696	2.0	333,472	11.9	2,437	5.0	90,520	29.4
PIPER PA24	2,718	0.0	255,660	20.4	2,092	6.4	44,133	20.4
PIPER PA25	941	0.1	149,762	13.5	95	55.6	1,921	61.5
PIPER PA28	21,065	0.0	2,538,753	7.3	15,324	2.9	439,123	11.1
PIPER PA30	1,246	0.0	161,616	11.8	1,078	7.1	44,420	34.6
PIPER PA31	1,747	0.0	362,937	9.3	1,707	1.6	148,503	12.9
PIPER PA31T	519	0.1	100,124	10.7	512	2.5	41,745	25.5
PIPER PA32	4,212	0.0	499,728	8.3	3,287	5.2	143,333	18.7
PIPER PA34	1,752	0.0	333,586	10.1	1,594	4.9	77,640	15.5
PIPER PA36	252	0.2	46,946	21.9	65	47.2	467	53.2
PIPER PA38	1,181	0.0	280,178	13.4	976	6.0	37,782	14.3
PIPER PA42	98	0.5	21,515	8.8	74	14.1	8,470	25.1
PIPER PA44	303	0.2	102,561	20.9	273	8.5	22,588	39.0
PIPER PA46	283	0.2	41,542	11.5	280	2.2	10,844	21.2
PROPT200	49	1.0	3,155	13.9	23	23.7	150	28.1
RAVEN RX6	73	0.7	1,429	25.7	0	0.0	0	0.0
RAVEN S50	22	2.2	728	32.0	0	0.0	0	0.0
RAVEN S55	479	0.1	11,197	30.4	54	79.9	1,529	79.7
RAVEN S57	66	0.8	7,903	53.3	0	0.0	0	0.0

4.7 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
BY DAY/NIGHT BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

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MANUFACTURER/ MODEL GROUP	DAY				NIGHT			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
RAVEN S60	152	0.3	6,556	27.6	0	0.0	0	0.0
RAVEN S66	37	1.3	2,397	24.4	0	0.0	0	0.0
RKWE1500	30	1.6	6,002	15.1	30	1.6	1,327	13.7
RKWE1700	21	2.3	3,154	15.6	21	2.3	1,131	23.5
RKWE1NA265	289	0.2	79,233	9.6	289	0.2	27,876	18.8
ROLSCHLS	119	0.4	6,246	22.2	0	0.0	0	0.0
RYAN ST3	111	0.4	6,769	28.4	0	0.0	0	0.0
RYAN STA	19	2.6	401	35.3	0	0.0	0	0.0
SAAB SF340	16	3.0	14,914	14.4	16	3.0	7,563	35.0
SCHEMPDISCUS	44	1.1	3,599	19.3	0	0.0	0	0.0
SCHLERASK21	31	1.6	8,975	18.2	0	0.0	0	0.0
SCHLERASW15	33	1.5	1,849	14.2	0	0.0	0	0.0
SCHLERASW19	57	0.9	3,606	17.6	0	0.0	0	0.0
SCHLERASW20	90	0.6	7,160	12.7	0	0.0	0	0.0
SCHLERK8	19	2.6	959	43.1	0	0.0	0	0.0
SCHLERKA6	58	0.9	3,044	61.7	0	0.0	0	0.0
SCWZERG164	150	0.3	39,415	11.1	8	100.5	1,354	105.8
SCWZERSG1	534	0.1	29,396	13.7	2	135.9	0	0.0
SCWZERSG2	417	0.1	58,629	19.9	0	0.0	0	0.0
SEMCO MODEL T	4	10.8	99	31.6	0	0.0	0	0.0
SLINDS100	226	0.2	11,501	19.7	118	24.5	2,481	57.4
SMITH 600	343	0.1	55,561	22.1	302	8.4	17,119	40.2

4.7 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
BY DAY/NIGHT BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	DAY				NIGHT			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
SOCATAMS894	19	2.5	1,284	27.6	10	34.2	72	43.3
SOCATARALIYE	21	2.3	1,202	26.5	11	26.7	187	37.0
SOCATATB10	52	1.0	5,792	14.1	49	8.4	671	36.4
SOCATATB20	124	0.4	13,279	18.4	119	8.7	2,788	29.8
SPHRTHCIRRUS	83	0.6	4,022	26.5	0	0.0	0	0.0
SPHRTHNIMBUS	47	1.0	2,345	7.5	0	0.0	0	0.0
SPHRTHVENTUS	44	1.1	2,390	33.2	0	0.0	0	0.0
STBROSSD3	38	1.3	24,337	42.7	38	1.3	24,888	39.5
STNSON10	24	2.0	533	15.0	1	121.3	7	128.0
STNSONL5	43	1.1	2,173	25.7	12	33.4	118	67.4
STNSONSR9	4	11.4	106	30.4	3	48.3	6	69.3
STNSONV77	46	1.1	1,555	25.2	12	91.9	116	93.2
STOLAMRC3	115	0.4	3,322	45.2	4	166.7	26	173.8
SUPAC 1A	28	1.7	812	11.6	2	91.6	7	89.9
SWRNGNSA226	168	0.3	82,019	12.6	168	0.3	46,314	30.8
SWRNGNSA227	84	0.6	53,156	33.7	79	8.7	18,699	26.0
SWRNGNSA26	80	0.6	10,667	18.7	80	0.6	5,189	18.7
TCRAFKD	120	0.4	7,245	14.7	5	94.5	31	94.0
TCRAFTA	9	5.3	1,843	57.2	0	0.0	0	0.0
TCRAFTBC	1,100	0.0	51,962	18.5	88	58.5	337	73.5
TCRAFTBF	21	2.3	1,156	29.5	0	0.0	0	0.0
TCRAFTBL	71	0.7	2,816	22.2	10	73.0	48	82.1

4.7 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
BY DAY/NIGHT BY SDR MANUFACTURER/MODEL GROUP  
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MANUFACTURER/ MODEL GROUP	DAY				NIGHT			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
TEMCO 11A	13	3.7	1,062	23.7	7	35.8	38	36.7
THUNDRAX7	60	0.8	1,723	27.1	0	0.0	0	0.0
TMP SONNAVION	421	0.1	23,502	11.3	238	13.4	3,695	32.1
TRYTEK65	155	0.3	5,461	20.5	6	117.1	144	136.5
TRYTEKK	8	5.7	277	13.2	0	0.0	0	0.0
UNIVACGC1	409	0.1	34,559	23.6	193	22.2	1,054	29.2
UNIVAR108	1,142	0.0	271,940	52.4	582	18.7	10,168	38.1
UNIVAR415	1,630	0.0	81,272	11.7	471	22.5	2,787	29.6
VALENT17	22	2.2	1,099	29.0	11	36.0	56	54.1
VARGA 2150	121	0.4	7,224	13.5	57	29.3	1,161	41.9
WACO ASO	8	5.7	318	32.6	0	0.0	0	0.0
WACO GXE	5	8.8	136	42.2	0	0.0	0	0.0
WACO R	13	3.8	442	23.5	2	121.6	2	122.5
WACO UPF7	95	0.5	7,113	35.8	4	78.1	38	83.2
WACO YK	16	3.0	626	19.1	1	128.1	21	138.1
WSK M18	31	1.6	16,249	11.3	8	52.6	36	50.5
WTHRLY201	47	1.0	13,120	9.7	1	122.1	37	130.6
TOTALS	212,025	0.0	26,560,114	1.7	129,468	0.9	5,354,090	2.8

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.  
FOR ADDITIONAL INFORMATION, SEE APPENDIX B FOR SDR AIRCRAFT GROUP NAMES AND FAA MANUFACTURER/MODEL CODES.

4.8 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
UNDER VMC AND IMC CONDITIONS BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	IMC				VMC			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
OTHER 1	554	30.9	8,668	40.8	10,580	0.0	665,890	10.8
OTHER 2	586	18.6	14,188	30.9	1,415	0.0	163,848	20.0
OTHER 3	20	203.8	3,307	210.0	166	0.3	22,033	35.4
OTHER 4	93	78.6	2,058	86.6	237	0.2	27,330	42.6
OTHER 5	30	1.6	2,072	14.6	30	1.6	8,507	56.6
OTHER 6	364	0.1	113,856	35.3	356	3.7	122,900	23.5
OTHER 7	286	8.5	61,749	23.1	293	0.2	319,084	29.8
OTHER 8	40	19.7	6,471	56.2	57	0.9	12,444	23.1
OTHER 9	339	7.1	33,591	30.0	338	7.3	90,896	16.9
OTHER 10	166	10.6	14,078	48.6	147	16.0	24,946	39.0
OTHER 13	10	164.0	132	167.1	2,549	0.0	143,491	18.5
ADAMS A50S	0	0.0	0	0.0	112	0.4	2,406	20.8
AIRPTSA	0	0.0	0	0.0	131	0.4	15,946	23.5
AIRTRCAT300	0	0.0	0	0.0	403	0.1	145,200	7.3
AIRTRCAT400	0	0.0	0	0.0	60	0.8	22,410	19.8
AIRTRCAT500	17	43.6	1,662	41.9	37	1.3	16,686	13.4
AMD FALC10	121	0.4	11,306	31.1	117	5.1	35,782	12.0
AMD FALC20	160	9.2	19,047	32.3	164	8.2	51,249	15.1
AMD FALC50	102	0.5	10,958	24.7	89	9.8	31,977	13.2
AMTR TMK	0	0.0	0	0.0	14	3.5	193	32.5
ARCTICS1A	0	0.0	0	0.0	49	1.0	2,343	21.1
ARCTICS1B1	0	0.0	0	0.0	14	3.5	611	32.1

4.8 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
UNDER VMC AND IMC CONDITIONS BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	IMC				VMC			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
ARONCA15	8	67.6	32	112.1	135	0.4	9,203	16.9
ARONCA58	2	132.5	0	0.0	60	0.8	2,600	24.4
ARONCA65	0	0.0	0	0.0	97	0.5	3,864	45.5
ARONCAC3	0	0.0	0	0.0	13	3.6	190	19.2
AVIANWFALCON	0	0.0	0	0.0	5	8.5	84	4.8
AVIANWSKYHWK	0	0.0	0	0.0	37	1.3	1,464	22.0
AYRES S2	17	46.5	239	37.1	757	0.1	348,983	9.4
BAG B206	5	78.6	264	76.4	14	3.4	562	36.4
BAG DH125	73	0.7	11,010	21.3	61	11.4	17,345	18.7
BALWKSFIREFY	62	72.7	1,432	72.5	1,359	3.4	49,181	13.6
BBAVIA11	0	0.0	0	0.0	542	0.1	22,518	19.3
BBAVIA7	0	0.0	0	0.0	2,131	0.0	121,392	12.7
BBAVIA8	0	0.0	0	0.0	178	0.3	25,979	29.9
BEECH 100	229	0.2	17,136	30.2	229	0.2	45,165	12.9
BEECH 17	8	71.0	74	82.5	88	0.6	4,282	14.4
BEECH 18	296	20.4	69,003	28.9	431	8.8	116,373	27.3
BEECH 1900	106	0.5	59,609	27.6	106	0.5	88,761	42.5
BEECH 200	809	0.1	111,384	19.4	803	1.8	208,193	13.5
BEECH 23	1,023	13.3	44,673	28.7	2,583	0.0	278,709	15.2
BEECH 300	163	0.3	17,307	23.1	153	5.4	42,256	10.7
BEECH 33	1,536	4.9	44,951	14.3	1,928	0.0	215,796	11.1
BEECH 35	3,225	8.2	76,319	14.8	6,300	0.0	532,179	6.8



4.8 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
UNDER VMC AND IMC CONDITIONS BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	IMC				VMC			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
BEECH 36	1,729	6.6	38,170	13.8	2,288	0.0	264,792	8.1
BEECH 45	83	23.5	1,761	33.0	230	0.2	26,201	12.8
BEECH 50	80	42.8	1,350	45.1	142	0.4	14,255	28.1
BEECH 55	1,702	5.9	62,028	18.7	2,007	1.2	225,660	14.4
BEECH 56	30	18.4	4,157	52.6	52	1.0	2,989	24.1
BEECH 58	1,389	4.1	120,997	17.3	1,496	0.0	318,925	11.1
BEECH 60	363	6.9	14,773	33.3	377	0.1	40,465	17.9
BEECH 65	14	143.4	720	146.5	85	0.6	32,797	33.4
BEECH 76	266	3.6	10,899	21.9	277	0.2	42,105	15.8
BEECH 77	53	33.8	1,222	41.8	232	0.2	67,611	13.7
BEECH 80	61	52.9	3,331	63.8	135	10.3	21,421	82.7
BEECH 90	997	0.1	82,973	18.9	960	3.4	244,326	9.6
BEECH 95	288	13.0	5,738	35.7	436	0.1	36,313	13.6
BEECH 99	100	0.5	33,260	47.8	72	29.9	46,642	33.4
BLANCA11	0	0.0	0	0.0	50	1.0	2,369	13.3
BLANCA1413	21	42.0	196	60.3	105	0.5	6,291	18.9
BLANCA1419	62	48.9	979	118.8	204	0.2	8,828	29.5
BLANCA17	536	13.0	10,238	22.9	954	0.1	66,201	11.3
BLANCA7	4	223.7	23	237.4	1,862	0.4	166,351	17.4
BLANCA8	0	0.0	0	0.0	403	0.1	23,814	15.7
BNORM BN2	6	84.6	544	83.4	52	0.9	34,414	14.9
BOEING727	22	2.2	739	0.1	22	2.2	6,653	0.0

4.8 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
UNDER VMC AND IMC CONDITIONS BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	IMC				VMC			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
BOEING75	0	0.0	0	0.0	845	0.1	46,284	15.2
BRAERODH125	115	0.4	11,159	28.0	113	3.9	29,981	14.5
BRASOVIS28	0	0.0	0	0.0	46	1.1	3,221	16.3
BRWSTRFLEET2	0	0.0	0	0.0	10	4.8	154	19.4
BRWSTRFLEET7	0	0.0	0	0.0	9	5.2	235	42.0
BUKER 131	0	0.0	0	0.0	18	2.7	1,123	31.0
CAMRONMODELO	0	0.0	0	0.0	30	1.6	1,776	9.2
CAMRONMODELO	0	0.0	0	0.0	184	0.3	5,213	21.4
CASA C212	33	1.5	6,039	32.4	26	25.7	7,261	44.8
CESSNA120	51	77.1	1,026	76.9	668	0.1	42,665	16.5
CESSNA140	149	39.8	4,445	80.8	1,634	0.6	107,412	9.6
CESSNA150	1,133	21.7	37,669	36.4	15,697	0.0	3,340,060	7.7
CESSNA170	192	45.9	5,064	69.7	1,948	0.0	138,970	14.8
CESSNA172	8,431	6.0	314,525	15.3	23,060	0.0	3,379,875	5.8
CESSNA175	72	63.9	815	64.7	956	0.1	49,498	18.1
CESSNA177	1,188	13.3	19,876	25.5	2,686	0.0	220,345	10.5
CESSNA180	562	22.2	13,122	41.2	2,490	0.0	206,719	9.9
CESSNA182	5,508	6.9	116,624	14.0	12,828	0.0	1,296,360	5.4
CESSNA185	364	21.0	5,536	27.8	1,321	0.0	199,344	13.5
CESSNA188	0	0.0	0	0.0	1,459	0.0	322,304	12.1
CESSNA190	15	33.7	142	45.3	63	0.8	4,029	15.5
CESSNA195	60	29.6	689	34.3	376	0.1	17,762	9.0

4.8 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
UNDER VMC AND IMC CONDITIONS BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	IMC				VMC			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
CESSNA205	44	40.5	886	56.2	222	0.2	21,872	18.5
CESSNA206	934	16.4	34,459	34.1	2,387	0.0	382,425	12.3
CESSNA207	19	99.0	1,285	101.1	106	0.5	57,895	19.8
CESSNA208	96	12.6	32,588	22.0	99	4.7	38,711	71.7
CESSNA210	3,874	6.4	111,994	15.0	5,633	0.0	709,523	10.7
CESSNA303	153	3.7	11,364	34.2	153	3.7	48,081	26.1
CESSNA305	16	75.1	221	79.2	219	0.2	18,267	26.3
CESSNA310	1,822	9.6	72,735	17.0	2,717	0.0	319,102	10.1
CESSNA320	187	8.5	4,839	16.8	287	0.2	34,591	9.6
CESSNA335	37	10.3	1,193	23.1	43	1.1	5,393	18.8
CESSNA336	17	30.9	241	43.4	43	1.2	2,706	14.6
CESSNA337	609	11.0	10,043	17.5	1,021	0.0	79,740	11.9
CESSNA340	824	4.5	38,142	14.7	872	0.1	95,709	11.9
CESSNA401	202	7.7	11,643	46.7	214	0.2	27,651	24.8
CESSNA402	332	12.6	42,304	27.7	450	0.1	168,819	14.2
CESSNA404	121	0.4	17,697	41.8	115	13.0	33,554	25.0
CESSNA411	17	53.3	616	65.2	53	0.9	2,867	29.0
CESSNA414	694	4.9	41,471	13.1	741	2.0	139,410	11.8
CESSNA421	1,088	4.6	41,485	20.0	1,141	1.4	140,208	17.7
CESSNA425	182	0.3	10,225	26.9	176	5.0	37,010	17.0
CESSNA441	220	0.2	21,437	26.1	205	6.5	43,282	15.1
CESSNA500	552	2.2	101,512	25.5	495	7.7	163,887	14.3

4.8 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
UNDER VMC AND IMC CONDITIONS BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

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MANUFACTURER/ MODEL GROUP	IMC				VMC			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
CESSNA501	258	0.2	27,398	29.4	250	4.2	48,302	15.9
CESSNA650	141	0.4	20,723	23.6	125	6.9	54,405	14.4
CESSNA750	2	100.3	64	100.4	19	2.6	485	24.1
CESSNAUC94	0	0.0	0	0.0	16	3.0	326	33.1
CHILD S1	0	0.0	0	0.0	55	0.9	4,258	16.5
CHILD S2	0	0.0	0	0.0	151	0.3	11,826	13.1
CHRIS HUSKY	12	36.2	98	41.8	49	1.0	4,821	17.1
CNDARCL600	116	0.4	16,597	32.2	88	17.1	23,007	23.6
CNTRAR101	0	0.0	0	0.0	34	1.4	2,524	21.4
COMWTH185	0	0.0	0	0.0	47	1.1	1,612	39.0
CONAERLA4	60	43.3	981	52.4	421	0.1	34,737	12.9
CURTISJR	0	0.0	0	0.0	4	11.9	26	11.4
CURTISROBIN	0	0.0	0	0.0	4	11.1	30	24.1
CURTISTRVAIR	0	0.0	0	0.0	36	1.4	3,043	22.9
CVAC 240	3	12.6	258	58.9	3	12.6	357	39.6
CVAC 340	3	15.0	0	0.0	3	15.0	0	0.0
CVAC BT13	0	0.0	0	0.0	31	1.6	2,152	30.3
CVAC L13	0	0.0	0	0.0	3	15.0	55	18.1
CVAC STC580	39	1.3	18,452	33.7	16	68.6	2,648	71.8
DART G	0	0.0	0	0.0	3	13.6	58	28.6
DHAV DHC1	0	0.0	0	0.0	66	0.8	3,894	29.0
DHAV DHC2	4	121.4	89	127.2	174	0.3	67,378	17.6

4.8 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
UNDER VMC AND IMC CONDITIONS BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	IMC				VMC			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
DHAV DHC3	0	0.0	0	0.0	38	1.3	12,808	13.6
DHAV DHC4	4	12.3	81	0.6	4	12.3	243	0.2
DHAV DHC6	81	8.8	32,695	24.5	92	3.7	64,790	12.8
DHAV DHC8	25	2.0	624	10.0	25	2.0	6,313	9.9
DHAVXXDH82	0	0.0	0	0.0	51	1.0	1,313	36.4
DORNERDO228	32	1.5	12,936	12.8	32	1.5	42,984	29.4
DOUG A26	1	117.6	2	120.5	14	3.5	252	24.2
DOUG DC3	148	14.0	20,779	25.7	236	5.8	37,651	13.6
DOUG DC4	32	26.1	2,603	44.8	39	20.3	3,264	39.0
EAGLE DW	0	0.0	0	0.0	54	0.9	12,002	12.9
EAGLEBAX7	0	0.0	0	0.0	17	2.8	673	19.9
EAGLEBC7	7	65.4	0	0.0	65	0.8	2,136	13.3
EIRVON20	0	0.0	0	0.0	106	0.5	6,941	13.0
EMB 110	70	0.7	111,383	43.5	30	78.2	43,791	80.5
EMB 120	50	1.0	18,272	18.4	50	1.0	74,417	18.1
FLEET 16B	0	0.0	0	0.0	13	3.7	519	18.8
FOKKERF27	0	0.0	0	0.0	18	2.7	9,093	0.0
FRCHLD22	0	0.0	0	0.0	9	5.1	169	24.0
FRCHLD24	0	0.0	0	0.0	108	0.5	4,183	18.7
FRCHLDF27	13	22.7	686	33.3	17	2.8	3,507	41.8
FRCHLDM62	0	0.0	0	0.0	111	0.4	4,119	21.2
GALAXYGX7	1	119.6	2	122.0	43	1.1	1,343	20.0

4.8 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
UNDER VMC AND IMC CONDITIONS BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	IMC				VMC			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
GENBALAX6	0	0.0	0	0.0	27	1.8	1,092	41.7
GLASER300	0	0.0	0	0.0	12	4.1	678	21.5
GLASER400	0	0.0	0	0.0	34	1.4	1,777	22.5
GLASFL201	0	0.0	0	0.0	29	1.7	1,147	13.2
GLASFLH301	0	0.0	0	0.0	80	0.6	3,674	21.8
GROB 103CAT	0	0.0	0	0.0	54	0.9	5,757	27.9
GROB 109	2	90.1	42	87.3	64	0.8	5,134	9.8
GROB ASTIR	0	0.0	0	0.0	51	1.0	3,081	17.8
GRTLKS2T1	21	53.8	23	53.7	107	0.5	4,238	24.8
GRUMANS16	11	48.2	218	51.0	22	2.2	2,562	30.0
GRUMAVAA1	135	33.8	1,184	93.4	460	0.1	40,656	17.6
GRUMAVAA5	476	17.0	6,156	30.8	975	0.1	83,043	12.2
GRUMAVG1159	26	1.9	3,752	30.0	18	22.5	4,644	27.4
GRUMAVG164	0	0.0	0	0.0	1,014	0.0	401,496	11.8
GRUMAVG21	2	187.1	10	210.6	51	1.0	5,735	30.8
GRUMAVTBM	0	0.0	0	0.0	26	1.9	1,017	20.6
GULSTM112	312	15.8	5,182	26.9	544	0.1	37,292	10.7
GULSTM500	261	12.2	7,124	71.6	297	0.2	40,671	47.0
GULSTM520	21	41.4	218	48.2	34	1.5	2,544	28.0
GULSTM560	55	38.5	1,019	49.6	90	0.6	7,254	34.5
GULSTM680	253	10.2	21,448	42.2	268	0.2	42,679	27.6
GULSTM680TP	81	7.5	2,614	29.2	88	0.6	8,122	17.1

4.8 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
UNDER VMC AND IMC CONDITIONS BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	IMC				VMC			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
GULSTM690TC	25	2.0	2,678	14.7	23	7.9	4,856	11.7
GULSTM690TP	364	6.5	28,446	57.1	359	7.3	48,659	22.3
GULSTMAA1	47	64.0	2,763	70.6	474	0.1	32,737	16.2
GULSTMAA5	165	29.0	2,132	49.1	569	0.1	45,061	9.0
GULSTMGL1159	220	0.2	23,727	38.1	193	9.3	48,698	17.9
GULSTMGL159	69	4.7	8,487	26.2	66	7.3	22,016	19.2
GULSTMGA4	33	29.5	765	47.7	76	0.7	7,726	34.0
GULSTMGA7	4	56.2	143	66.3	11	4.5	4,278	55.2
GULSTMGA7	40	13.1	1,316	28.6	49	1.0	9,139	23.7
HELIO H295	45	21.4	563	39.6	85	0.6	11,770	18.3
HELIO H391	2	154.8	5	165.5	20	2.5	629	49.3
HSPAVNHA200	0	0.0	0	0.0	19	2.6	411	26.2
HWKSLYDH104	8	70.3	13	69.7	17	2.9	1,018	18.6
HWKSLYDH125	182	0.3	20,710	33.6	182	0.3	45,631	15.1
INTRCP200	13	41.1	198	50.1	27	1.8	1,972	42.6
ISRAEL1121	85	0.6	5,711	35.3	76	8.9	9,063	19.3
ISRAEL1123	22	2.2	904	28.9	22	2.2	2,827	24.5
ISRAEL1124	206	0.2	27,060	25.3	173	11.0	57,317	15.0
JEMSTRDGA15	1	132.8	2	135.9	45	1.1	2,875	22.9
LEAR 23	37	1.3	12,439	46.6	12	97.6	578	111.2
LEAR 24	155	5.7	15,251	28.4	144	8.4	33,848	22.2
LEAR 25	185	15.2	14,632	46.1	224	7.1	59,100	15.3

4.8 1983 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
UNDER VMC AND IMC CONDITIONS BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	IMC				VMC			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
LEAR 35	344	10.7	46,797	25.4	377	7.3	159,885	16.3
LEAR 55	101	0.5	25,290	23.7	90	9.4	20,706	19.0
LET L13	0	0.0	0	0.0	130	0.4	14,284	22.1
LKHEED1329	77	0.6	8,733	21.2	72	7.6	13,796	20.0
LKHEED18	0	0.0	0	0.0	54	0.9	1,152	17.9
LKHEEDP2V	0	0.0	0	0.0	26	1.9	234	7.7
LKHEEDT33	2	118.7	6	121.6	12	4.0	182	43.9
LUSCOM8	1	340.4	6	406.4	1,154	0.0	64,630	11.8
MARTIN404	2	17.8	115	0.4	2	17.8	115	0.4
MAULE M4	14	97.3	156	97.2	163	0.3	8,718	16.7
MAULE M5	31	69.2	488	71.4	293	0.2	39,956	37.5
MAULE M6	13	75.3	328	76.7	68	0.7	6,338	40.2
MCLISHFUNKB	0	0.0	0	0.0	64	0.8	2,576	20.1
MEYERSOTW	0	0.0	0	0.0	29	1.7	1,215	21.8
MNCUP90	0	0.0	0	0.0	16	3.0	378	12.8
MNMITEM18	0	0.0	0	0.0	51	0.8	1,567	15.9
MOONEYM20	3,574	6.9	84,206	14.5	5,675	0.7	478,507	5.5
MRCHTIS205	1	124.2	5	130.0	24	2.1	900	24.2
MTBSIMU2	278	4.5	20,946	41.4	281	2.8	68,244	17.5
MTBSIMU300	75	0.7	5,131	21.3	62	12.2	15,272	22.0
MULTECD16	5	78.3	1	82.4	23	2.1	991	24.5
NAMER B25	2	110.5	21	112.7	13	3.8	525	33.9



4.8 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
UNDER VMC AND IMC CONDITIONS BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTOCRAFT)

MANUFACTURER/ MODEL GROUP	IMC				VMC			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
NAMER F51	11	55.2	138	70.4	81	0.6	4,848	15.5
NAMER NA260	16	39.0	294	45.2	107	0.5	5,383	10.6
NAMER T6	37	58.7	330	67.8	475	0.1	33,520	13.0
NATBAL752	0	0.0	0	0.0	33	1.5	987	25.3
NAVAL N34	0	0.0	0	0.0	52	1.0	1,579	27.6
NAVIONNAVION	70	53.6	859	74.3	395	0.1	38,453	22.3
NORD 3202	0	0.0	0	0.0	6	8.2	150	13.7
NORD SV4	0	0.0	0	0.0	29	1.7	1,430	29.9
NORWST65	0	0.0	0	0.0	23	2.1	781	16.2
PARTENP68	29	5.9	1,347	11.1	31	1.6	10,050	9.9
PICARDAX6	0	0.0	0	0.0	43	1.1	857	25.2
PILATSB4	0	0.0	0	0.0	24	2.0	3,289	34.5
PIPER 600	321	6.4	10,247	26.3	339	1.9	36,699	14.6
PIPER J2	0	0.0	0	0.0	18	2.7	359	20.0
PIPER J3	30	93.6	553	93.5	2,332	0.0	132,497	19.5
PIPER J4	0	0.0	0	0.0	84	0.6	4,232	20.3
PIPER J5	0	0.0	0	0.0	193	0.3	13,204	23.9
PIPER PA12	24	104.4	361	104.5	848	0.1	60,133	29.3
PIPER PA14	0	0.0	0	0.0	8	6.1	311	18.7
PIPER PA15	0	0.0	0	0.0	111	0.4	7,918	51.4
PIPER PA16	2	175.5	49	193.8	196	0.3	8,496	15.1
PIPER PA17	0	0.0	0	0.0	67	0.7	2,779	19.4

4.8 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
UNDER VMC AND IMC CONDITIONS BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	IMC				VMC			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
PIPER PA18	61	56.1	1,938	60.5	3,001	0.0	335,776	11.0
PIPER PA20	11	98.0	53	98.9	190	0.3	16,482	29.6
PIPER PA22	59	87.8	191	84.5	3,253	0.0	149,438	10.6
PIPER PA23	1,844	9.7	62,773	26.6	2,753	0.0	361,388	11.0
PIPER PA24	1,553	10.1	38,211	27.7	2,711	0.6	260,694	19.1
PIPER PA25	0	0.0	0	0.0	941	0.1	151,903	13.2
PIPER PA28	8,338	5.6	311,329	19.3	21,025	0.2	2,670,034	7.0
PIPER PA30	1,043	8.0	52,561	26.0	1,246	0.0	153,474	13.0
PIPER PA31	1,677	2.5	153,906	13.1	1,708	1.8	358,077	9.2
PIPER PA31T	519	0.1	33,088	19.9	519	0.1	108,778	13.7
PIPER PA32	2,635	7.6	84,886	16.1	4,212	0.0	558,175	9.3
PIPER PA34	1,656	3.7	119,787	18.0	1,718	2.2	293,314	10.7
PIPER PA36	0	0.0	0	0.0	252	0.2	47,414	22.2
PIPER PA38	195	29.5	6,170	40.1	1,181	0.0	311,924	12.8
PIPER PA42	98	0.5	6,371	26.8	98	0.5	23,614	12.6
PIPER PA44	266	9.5	21,745	18.8	303	0.2	103,419	22.1
PIPER PA46	283	0.2	15,277	17.8	283	0.2	37,110	12.5
PROPT200	20	26.2	332	32.7	49	1.0	2,974	13.2
RAVEN RX6	0	0.0	0	0.0	73	0.7	1,429	25.7
RAVEN S50	0	0.0	0	0.0	22	2.2	728	32.0
RAVEN S55	0	0.0	0	0.0	479	0.1	12,726	29.0
RAVEN S57	0	0.0	0	0.0	66	0.8	7,903	53.3

4.8 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
UNDER VMC AND IMC CONDITIONS BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	IMC				VMC			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
RAVEN S60	0	0.0	0	0.0	152	0.3	6,556	27.6
RAVEN S66	0	0.0	0	0.0	37	1.3	2,397	24.4
RKWEILL500	30	1.6	1,475	13.9	30	1.6	5,854	14.4
RKWEILL700	21	2.3	1,775	16.6	21	2.3	2,511	30.3
RKWEILLNA265	289	0.2	46,793	17.4	228	11.2	60,315	20.1
ROLSCHLS	0	0.0	0	0.0	119	0.4	6,246	22.2
RYAN ST3	0	0.0	0	0.0	111	0.4	6,769	28.4
RYAN STA	0	0.0	0	0.0	19	2.6	401	35.3
SAAB SF340	16	3.0	4,852	16.0	16	3.0	17,625	22.8
SCHEMPDISCUS	0	0.0	0	0.0	44	1.1	3,599	19.3
SCHLERASK21	0	0.0	0	0.0	31	1.6	8,975	18.2
SCHLERASW15	0	0.0	0	0.0	33	1.5	1,849	14.2
SCHLERASW19	0	0.0	0	0.0	57	0.9	3,606	17.6
SCHLERASW20	0	0.0	0	0.0	90	0.6	7,160	12.7
SCHLERK8	0	0.0	0	0.0	19	2.6	959	43.1
SCHLERKA6	0	0.0	0	0.0	58	0.9	3,044	61.7
SCWZERG164	0	0.0	0	0.0	150	0.3	40,769	12.0
SCWZERSG1	3	111.0	95	112.7	534	0.1	29,357	13.8
SCWZERSG2	0	0.0	0	0.0	417	0.1	58,629	19.9
SEMO MODEL T	0	0.0	0	0.0	4	10.8	99	31.6
SLINDS100	5	154.9	99	159.6	226	0.2	14,308	25.2
SMITH 600	318	6.4	18,731	19.7	332	4.2	53,951	23.1

4.8 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
UNDER VMC AND IMC CONDITIONS BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	IMC				VMC			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
SOCATAMS894	0	0.0	0	0.0	19	2.5	1,356	26.5
SOCATARALLYE	1	95.4	51	93.9	21	2.3	1,338	24.0
SOCATATB10	38	18.6	723	39.7	52	1.0	5,741	13.6
SOCATATB20	116	11.5	1,656	46.3	124	0.4	14,411	18.1
SPHRTHCIRRUS	0	0.0	0	0.0	83	0.6	4,022	26.5
SPHRTHNIMBUS	0	0.0	0	0.0	47	1.0	2,345	7.5
SPHRTHVENTUS	0	0.0	0	0.0	44	1.1	2,390	33.2
STEROSSD3	38	1.3	24,095	44.2	38	1.3	25,130	38.1
STNSON10	0	0.0	0	0.0	24	2.0	540	15.2
STNSONL5	0	0.0	0	0.0	43	1.1	2,291	25.0
STNSONSR9	0	0.0	0	0.0	4	11.4	112	30.7
STNSONV77	9	109.6	230	110.1	46	1.1	1,441	18.9
STOLAMRC3	1	267.1	5	324.5	115	0.4	3,343	45.0
SUPAC LA	0	0.0	0	0.0	28	1.7	819	11.3
SWRNGNSA226	168	0.3	42,560	23.0	164	6.0	85,772	16.5
SWRNGNSA227	79	8.7	27,357	54.2	84	0.6	44,498	32.7
SWRNGNSA26	80	0.6	6,418	37.8	77	7.4	9,449	15.3
TCRAFTD	0	0.0	0	0.0	120	0.4	7,276	14.7
TCRAFTA	0	0.0	0	0.0	9	5.3	1,843	57.2
TCRAFTBC	0	0.0	0	0.0	1,100	0.0	52,302	18.4
TCRAFTBF	0	0.0	0	0.0	21	2.3	1,156	29.5
TCRAFTBL	0	0.0	0	0.0	71	0.7	2,874	22.0

4.8 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN  
UNDER VMC AND IMC CONDITIONS BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/ MODEL GROUP	IMC				VMC			
	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR	NUMBER ACTIVE AIRCRAFT	PERCENT STANDARD ERROR	HOURS FLOWN	PERCENT STANDARD ERROR
TEMCO 11A	2	76.2	19	71.2	13	3.7	1,080	23.1
THUNDRA7	0	0.0	0	0.0	60	0.8	1,723	27.1
TME SONNAVION	121	24.1	1,948	35.6	421	0.1	25,257	11.2
TRYTEK65	4	138.9	113	155.8	155	0.3	5,492	20.5
TRYTEKK	0	0.0	0	0.0	8	5.7	277	13.2
UNIVACGC1	17	99.6	103	108.3	409	0.1	35,506	23.1
UNIVAR108	23	131.9	738	132.6	1,142	0.0	281,595	51.6
UNIVAR415	0	0.0	0	0.0	1,630	0.0	84,082	11.8
VALENT17	0	0.0	0	0.0	22	2.2	1,155	28.8
VARGA 2150	14	75.8	718	78.9	117	5.2	7,900	15.4
WACO ASO	0	0.0	0	0.0	8	5.7	318	32.6
WACO GXE	0	0.0	0	0.0	5	8.8	136	42.2
WACO R	0	0.0	0	0.0	13	3.8	444	23.2
WACO UPF7	1	116.5	13	121.3	95	0.5	7,140	35.6
WACO YK	0	0.0	0	0.0	16	3.0	646	20.7
WSK M18	6	67.4	25	65.2	31	1.6	16,260	11.3
WTHRLY201	0	0.0	0	0.0	47	1.0	13,158	9.7
TOTALS	79,557	1.4	4,093,064	3.4	211,172	0.1	27,827,424	1.7

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

FOR ADDITIONAL INFORMATION, SEE APPENDIX B FOR SDR AIRCRAFT GROUP NAMES AND FAA MANUFACTURER/MODEL CODES.

## CHAPTER V

### FUEL CONSUMPTION

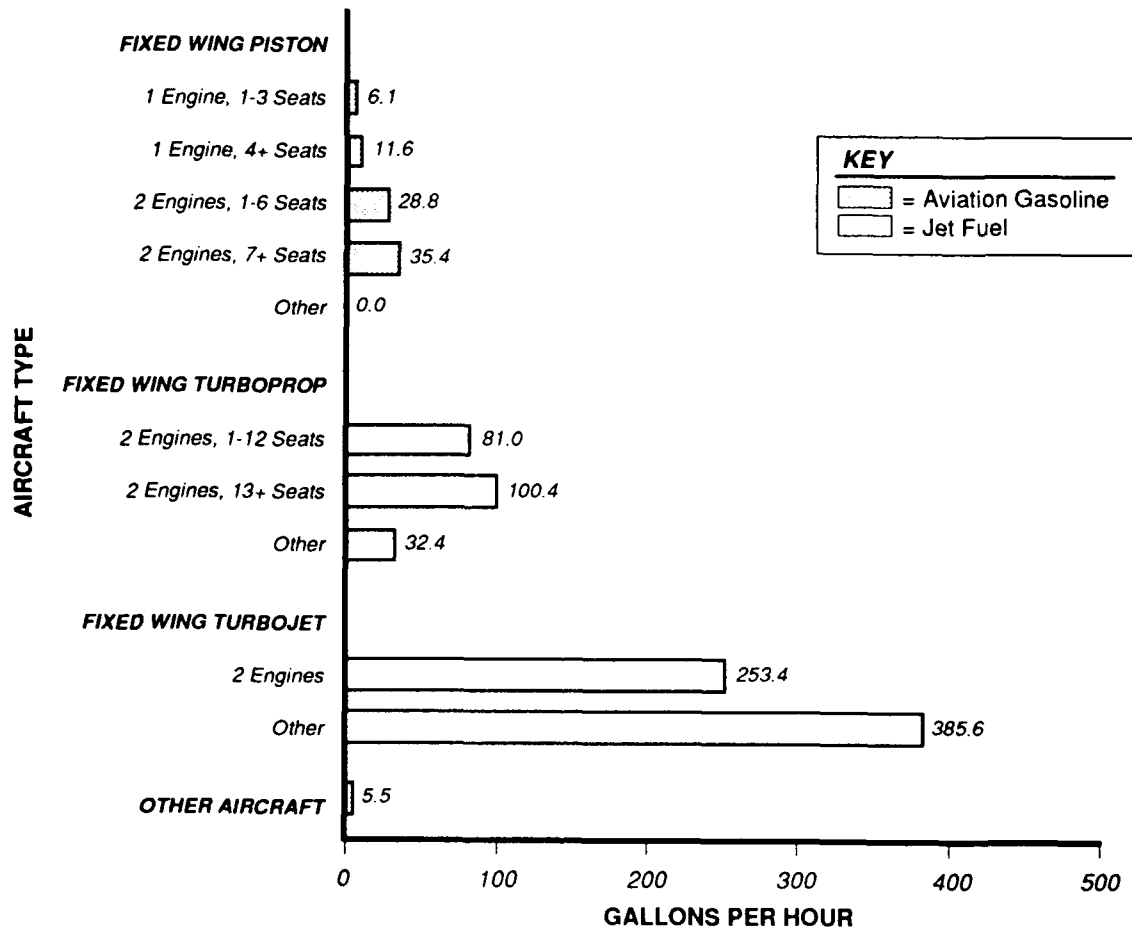
In 1989, the general aviation aircraft fleet (excluding rotorcraft) consumed 1.03 billion gallons of fuel, consisting of 688 million gallons of jet fuel and 343 million gallons of aviation gasoline. This chapter presents three tables and three figures. Table 5.1 gives consumption statistics. Table 5.2 shows, by aircraft type, fuel consumption by fuel grade, listing average gallons per hour, fuel use in millions of gallons, and percent of standard error. Table 5.2 also provides data on the other aircraft types' fuel consumption by fuel grade. The final table in this chapter, Table 5.3, presents data on the average rate of fuel consumption and estimated fuel use in millions of gallons by SDR Manufacturer/Model groups.

Figures 5.1 and 5.2 show, by aircraft type, fuel consumption rates and estimated fuel consumption of the general aviation fleet, respectively. Figure 5.3 depicts the fuel consumption of the general aviation fleet by fuel grade.

Some interesting points concerning fuel consumption are:

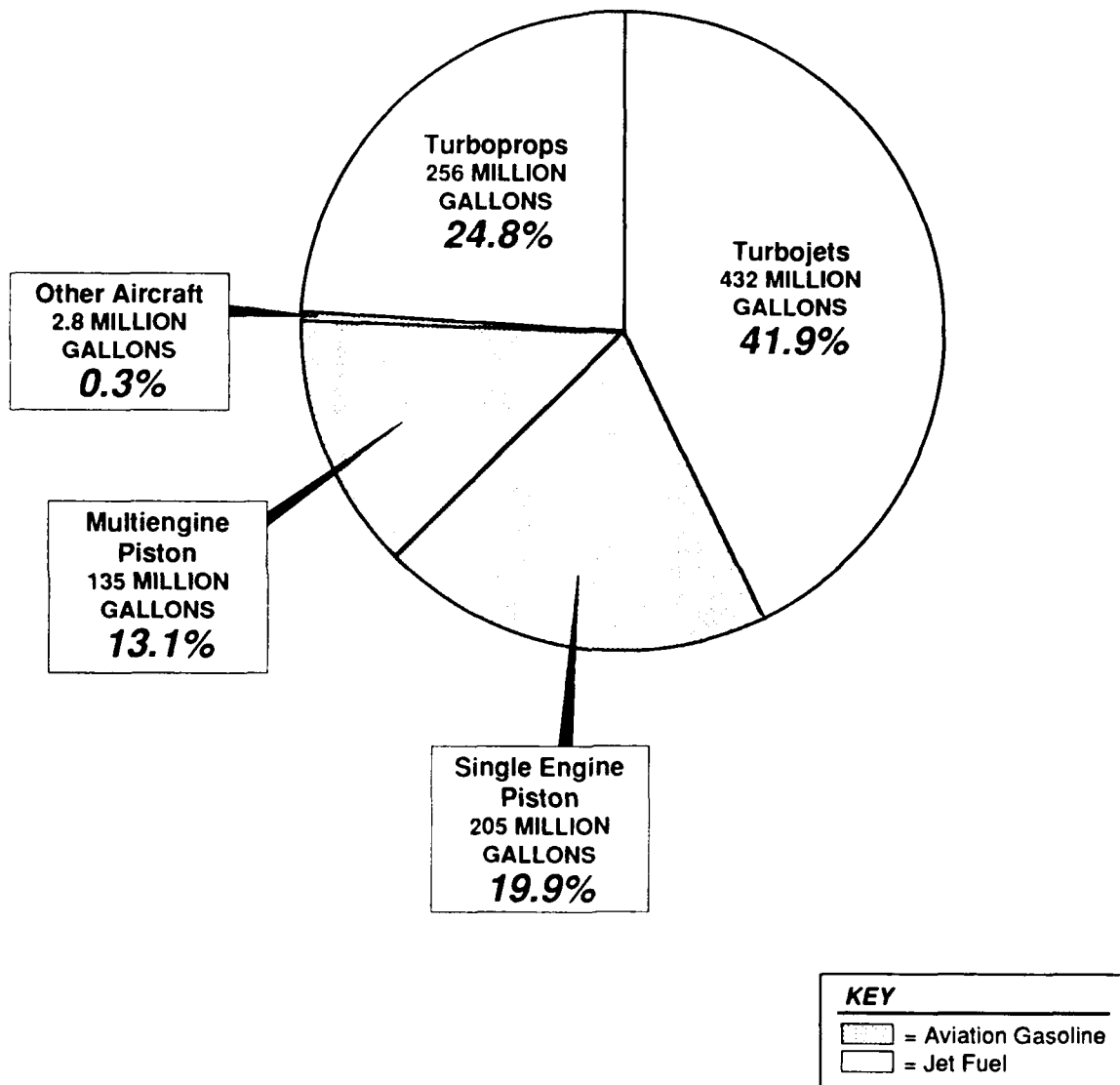
- o Although jet fuel consumption increased 3.4 percent, total general aviation fuel consumption in 1989 declined 2.3 percent from 1988. This decline is attributable to the 12.1 percent decrease in consumption of aviation gasoline.
- o Turbojets, which account for 41 percent of active turbine-engine aircraft, consumed 63 percent of all jet fuel used by the general aviation fleet.
- o Averaging 85 gallons per hour, turboprops consumed 256 million gallons of jet fuel (37 percent of total jet fuel consumed). Overall, turboprops accounted for 25 percent of the aviation fuel consumed in 1989.
- o Fixed wing piston aircraft, with a low average fuel consumption rate of 13 gallons per hour, nevertheless accounted for approximately 33 percent (340 million gallons) of the fuel consumed in 1989, due to their large numbers.
- o Of the 340 million gallons of gasoline consumed by the fixed wing piston aircraft, approximately 15 million gallons were 80 octane gasoline, 76 million gallons were 100 octane gasoline, 237 million gallons were 100 octane low lead gasoline, and 11 million gallons were automobile gasoline.

**Figure 5.1**  
**1989 AVERAGE FUEL CONSUMPTION RATES**  
**BY AIRCRAFT TYPE**



**SOURCE: Table 5.1**

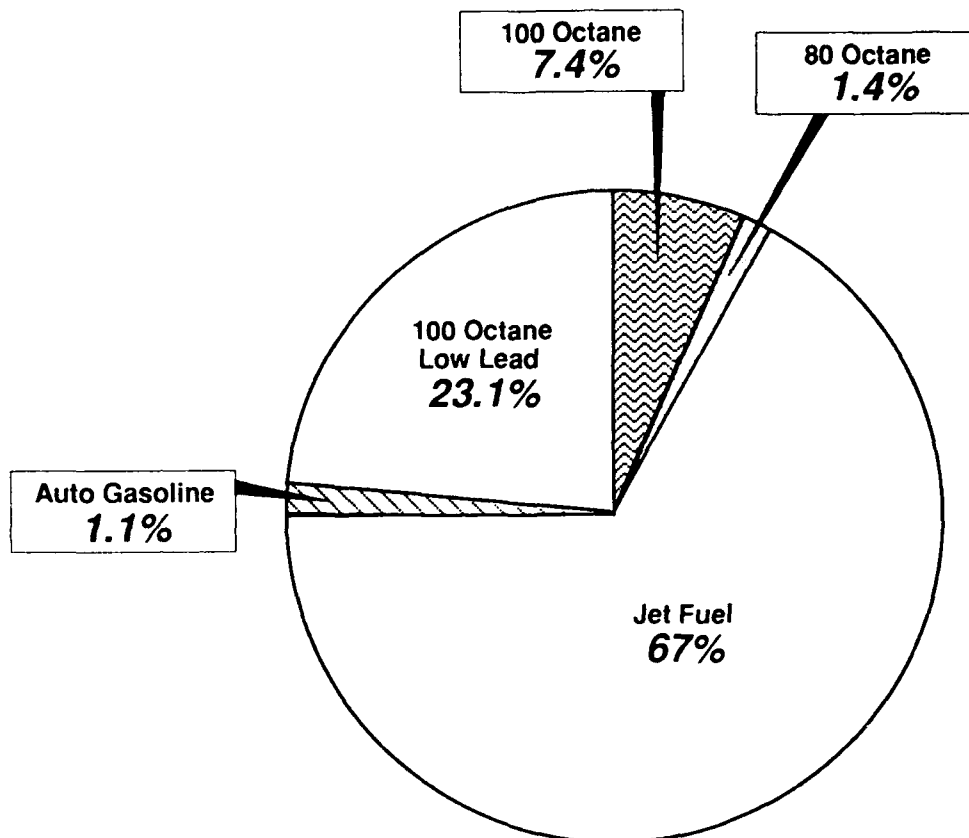
Figure 5.2  
**1989 ESTIMATED FUEL CONSUMPTION  
BY AIRCRAFT TYPE**  
(excludes rotorcraft)



**SOURCE:** Table 5.1 and 5.2



**Figure 5.3**  
**1989 GENERAL AVIATION FUEL CONSUMPTION**  
**BY FUEL GRADE**  
(excludes rotorcraft)



**SOURCE: Table 5.2**

5.1 1989 GENERAL AVIATION TOTAL FUEL CONSUMED AND AVERAGE FUEL CONSUMPTION RATE  
BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

AIRCRAFT TYPE	AVERAGE RATE GPH	ESTIMATED FUEL USE (mil gal)	PERCENT STANDARD ERROR
FIXED WING			
FIXED WING - PISTON			
1 ENG: 1-3 SEATS	6.1	56.3	4.2
1 ENG: 4+ SEATS	11.6	149.0	3.0
1 ENGINE: TOTAL	8.1	205.4	2.4
2 ENG: 1-6 SEATS	28.8	72.5	4.5
2 ENG: 7+ SEATS	35.4	62.1	6.3
2 ENGINE: TOTAL	31.5	134.6	3.8
PISTON: OTHER	0.0	0.0	0.0
PISTON: TOTAL	13.0	340.0	2.1
FIXED WING - TURBOPROP			
2 ENG: 1-12 SEATS	81.0	134.0	5.5
2 ENG: 13+ SEATS	100.4	117.6	10.2
2 ENGINE: TOTAL	88.6	251.5	5.6
TURBOPROP: OTHER	32.4	4.3	27.2
TURBOPROP: TOTAL	85.3	255.8	5.5
FIXED WING - TURBOJET			
2 ENGINE: TOTAL	253.4	391.6	4.8

5.1 1989 GENERAL AVIATION TOTAL FUEL CONSUMED AND AVERAGE FUEL CONSUMPTION RATE  
BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

AIRCRAFT TYPE	AVERAGE RATE GPH	ESTIMATED FUEL USE (mil gal)	PERCENT STANDARD ERROR
TURBOJET: OTHER	385.6	40.3	14.8
TURBOJET: TOTAL	267.2	431.9	4.5
FIXED WING: TOTAL	53.5	1027.7	2.4
OTHER (*)	5.5	2.8	9.2
TOTAL	53.4	1030.5	2.4
TOTAL: JET FUEL	158.6	687.7	3.5
TOTAL: AVIATION GASOLINE	12.9	342.8	2.1

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

(\*) PROPANE FUEL DATA WERE NOT SUFFICIENT FOR REASONABLE COMPUTATIONAL PURPOSES AND WERE NOT INCLUDED.

5.2 1989 GENERAL AVIATION TOTAL FUEL CONSUMED AND AVERAGE FUEL CONSUMPTION RATE  
BY FUEL GRADE BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 3

AIRCRAFT TYPE	FUEL GRADE					TOTAL
	80 OCTANE	100 OCTANE	100 LOWLEAD	AUTO GAS	JET FUEL PROPANE	
FIXED WING						
FIXED WING - PISTON						
1 ENG: 1-3 SEATS						
AVERAGE GPH	5.7	6.6	6.3	5.2	N/A	6.1
FUEL USE (mil gal)	8.2	9.3	32.5	6.3	N/A	56.3
% STD. ERROR	6.2	13.9	15.4	4.9	N/A	4.2
1 ENG: 4+ SEATS						
AVERAGE GPH	9.4	12.0	11.5	10.2	N/A	11.6
FUEL USE (mil gal)	2.3	38.8	104.9	2.4	N/A	149.0
% STD. ERROR	23.1	13.7	7.4	31.8	N/A	3.0
1 ENGINE: TOTAL						
AVERAGE GPH	5.9	9.2	8.6	5.4	N/A	8.1
FUEL USE (mil gal)	10.5	48.0	137.4	8.7	N/A	205.4
% STD. ERROR	7.0	11.4	6.7	9.4	N/A	2.4
2 ENG: 1-6 SEATS						
AVERAGE GPH	26.0	30.6	28.4	31.6	N/A	28.8
FUEL USE (mil gal)	0.1	20.6	49.8	2.5	N/A	72.5
% STD. ERROR	58.5	18.2	10.5	76.4	N/A	4.5
2 ENG: 7+ SEATS						
AVERAGE GPH	45.0	33.4	35.6	34.0	N/A	35.4
FUEL USE (mil gal)	4.0	7.8	50.0	0.1	N/A	62.1
% STD. ERROR	26.5	21.7	11.2	82.7	N/A	6.3
2 ENGINE: TOTAL						
AVERAGE GPH	36.4	31.4	31.6	32.7	N/A	31.5
FUEL USE (mil gal)	4.1	28.4	99.7	2.6	N/A	134.6
% STD. ERROR	26.1	14.5	7.7	74.5	N/A	3.8
PISTON: OTHER						
AVERAGE GPH	N/A	N/A	N/A	N/A	N/A	N/A
FUEL USE (mil gal)	N/A	N/A	N/A	N/A	N/A	N/A
% STD. ERROR	N/A	N/A	N/A	N/A	N/A	N/A
PISTON: TOTAL						
AVERAGE GPH	5.9	13.6	14.4	5.5	N/A	13.0
FUEL USE (mil gal)	14.6	76.4	237.2	11.3	N/A	340.0
% STD. ERROR	8.9	8.9	5.0	18.5	N/A	2.1

5.2 1989 GENERAL AVIATION TOTAL FUEL CONSUMED AND AVERAGE FUEL CONSUMPTION RATE  
BY FUEL GRADE BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 3

AIRCRAFT TYPE	FUEL GRADE					TOTAL
	80 OCTANE	100 OCTANE	100 LOWLEAD	AUTO GAS	JET FUEL PROPANE	
FIXED WING - TURBOPROP						
2 ENG: 1-12 SEATS						
AVERAGE GPH	N/A	N/A	N/A	N/A	81.1	N/A
FUEL USE (mil gal)	N/A	N/A	N/A	N/A	134.0	N/A
% STD. ERROR	N/A	N/A	N/A	N/A	5.5	N/A
2 ENG: 13+ SEATS						
AVERAGE GPH	N/A	N/A	N/A	N/A	100.4	N/A
FUEL USE (mil gal)	N/A	N/A	N/A	N/A	117.6	N/A
% STD. ERROR	N/A	N/A	N/A	N/A	10.4	N/A
2 ENGINE: TOTAL						
AVERAGE GPH	N/A	N/A	N/A	N/A	88.6	N/A
FUEL USE (mil gal)	N/A	N/A	N/A	N/A	251.6	N/A
% STD. ERROR	N/A	N/A	N/A	N/A	5.7	N/A
TURBOPROP: OTHER						
AVERAGE GPH	N/A	N/A	N/A	N/A	32.3	N/A
FUEL USE (mil gal)	N/A	N/A	N/A	N/A	4.2	N/A
% STD. ERROR	N/A	N/A	N/A	N/A	135.1	N/A
TURBOPROP: TOTAL						
AVERAGE GPH	N/A	N/A	N/A	N/A	85.3	N/A
FUEL USE (mil gal)	N/A	N/A	N/A	N/A	255.8	N/A
% STD. ERROR	N/A	N/A	N/A	N/A	6.0	N/A
FIXED WING - TURBOJET						
2 ENGINE: TOTAL						
AVERAGE GPH	N/A	N/A	N/A	N/A	253.6	N/A
FUEL USE (mil gal)	N/A	N/A	N/A	N/A	391.7	N/A
% STD. ERROR	N/A	N/A	N/A	N/A	4.8	N/A
TURBOJET: OTHER						
AVERAGE GPH	N/A	N/A	N/A	N/A	385.6	N/A
FUEL USE (mil gal)	N/A	N/A	N/A	N/A	40.3	N/A
% STD. ERROR	N/A	N/A	N/A	N/A	14.8	N/A
TURBOJET: TOTAL						
AVERAGE GPH	N/A	N/A	N/A	N/A	267.4	N/A
FUEL USE (mil gal)	N/A	N/A	N/A	N/A	432.0	N/A
% STD. ERROR	N/A	N/A	N/A	N/A	4.6	N/A

5.2 1989 GENERAL AVIATION TOTAL FUEL CONSUMED AND AVERAGE FUEL CONSUMPTION RATE  
BY FUEL GRADE BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

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AIRCRAFT TYPE	FUEL GRADE						TOTAL
	80 OCTANE	100 OCTANE	100 LOWLEAD	AUTO GAS	JET FUEL	PROPANE	
FIXED WING: TOTAL AVERAGE GPH FUEL USE (mil gal) % STD. ERROR	5.9	13.6	14.4	5.5	158.6	N/A	53.5
	14.6	76.4	237.2	11.3	687.8	N/A	1027.7
	8.9	8.9	5.0	18.5	3.6	N/A	2.4
OTHER AVERAGE GPH FUEL USE (mil gal) % STD. ERROR	5.0	3.6	4.4	4.4	N/A	(*)	5.5
	0.0	0.0	0.5	0.3	N/A	(*)	2.8
	17.9	100.1	104.1	27.4	N/A	(*)	9.2
TOTAL AVERAGE GPH FUEL USE (mil gal) % STD. ERROR	5.9	13.6	14.3	5.5	158.6	(*)	53.4
	14.7	76.5	237.6	11.6	687.8	(*)	1030.5
	8.9	8.9	5.0	18.0	3.6	(*)	2.4

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.  
WHERE THE NOTATION "N/A" APPEARS, THE FUEL GRADE IS NOT APPLICABLE FOR THE SPECIFIED AIRCRAFT TYPE.  
(\*) PROPANE FUEL DATA WERE NOT SUFFICIENT FOR REASONABLE COMPUTATIONAL PURPOSES AND WERE NOT INCLUDED.

5.3 1989 GENERAL AVIATION TOTAL FUEL CONSUMED AND AVERAGE FUEL CONSUMPTION RATE  
BY FUEL GRADE BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/MODEL GROUP	AVERAGE RATE GPH	ESTIMATED FUEL USE (mil gal)	PERCENT STANDARD ERROR
OTHER 1	6.6	4.5	13.9
OTHER 2	12.8	2.3	20.9
OTHER 3	25.5	0.9	56.3
OTHER 4	25.0	0.7	51.6
OTHER 5	0.0	0.0	0.0
OTHER 6	79.1	21.4	25.0
OTHER 7	89.0	36.4	24.9
OTHER 8	39.8	0.8	64.9
OTHER 9	408.7	51.1	24.1
OTHER 10	406.7	15.9	34.4
OTHER 13 (*)	5.1	0.7	23.7
ADAMS A50S (*)	18.4	0.0	22.7
AIRPTSA	0.0	0.0	0.0
AIRTRCAT300	0.0	0.0	0.0
AIRTRCAT500	0.0	0.0	0.0
AMD FALC20	221.3	10.4	11.3
AMTR TMK	331.4	14.0	14.8
ARCTICS1A	0.0	0.0	0.0
ARONCA15	0.0	0.0	0.0
ARONCA65	4.6	0.0	28.0
AVIANWFALCON (*)	4.4	0.0	32.3

5.3 1989 GENERAL AVIATION TOTAL FUEL CONSUMED AND AVERAGE FUEL CONSUMPTION RATE  
BY FUEL GRADE BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/MODEL GROUP	AVERAGE RATE GPH	ESTIMATED FUEL USE (mil gal)	PERCENT STANDARD ERROR
AYRES S2	10.0	2.9	14.7
BAG DH125	30.0	0.0	56.6
BBAVIA11	20.0	1.0	14.4
BBAVIA8	5.0	0.6	15.3
BEECH 17	85.5	5.3	12.2
BEECH 1900	0.0	0.0	0.0
BEECH 23	101.4	33.4	8.2
BEECH 33	109.4	7.0	6.6
BEECH 36	14.7	8.9	11.4
BEECH 50	11.5	0.3	16.8
BEECH 56	26.1	7.4	15.7
BEECH 60	30.9	13.5	12.4
BEECH 76	38.0	1.3	44.6
BEECH 80	5.0	0.3	13.7
BEECH 95	79.9	25.9	9.9
BLANCA7	5.9	1.4	14.2
BNORM BN2	8.5	0.2	18.1
BOEING75	0.0	0.0	0.0
BRASOVIS28	256.2	10.5	10.5
CAMRONMODELO (*)	8.0	0.0	36.5
CASA C212	0.0	0.0	0.0



5.3 1989 GENERAL AVIATION TOTAL FUEL CONSUMED AND AVERAGE FUEL CONSUMPTION RATE  
BY FUEL GRADE BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/MODEL GROUP	AVERAGE RATE GPH	ESTIMATED FUEL USE (mil gal)	PERCENT STANDARD ERROR
CESSNA140	5.2	0.2	19.1
CESSNA170	5.9	20.1	8.1
CESSNA175	7.5	28.2	8.4
CESSNA180	8.9	2.1	12.1
CESSNA185	13.2	18.6	6.1
CESSNA190	16.7	5.3	13.4
CESSNA205	14.4	0.3	10.9
CESSNA207	15.1	6.3	12.7
CESSNA210	50.8	1.3	48.6
CESSNA305	28.5	1.7	24.6
CESSNA320	30.4	11.9	11.5
CESSNA336	31.3	0.2	17.4
CESSNA340	24.4	2.2	13.2
CESSNA402	33.6	1.3	30.7
CESSNA411	43.9	2.2	21.6
CESSNA421	37.2	4.3	12.4
CESSNA441	73.4	3.5	16.1
CESSNA501	172.6	46.0	15.5
CESSNA50	239.0	17.8	10.6
CHILD S1	8.0	0.0	42.3
CHRIS HUSKY	12.6	0.1	14.2

5.3 1989 GENERAL AVIATION TOTAL FUEL CONSUMED AND AVERAGE FUEL CONSUMPTION RATE  
BY FUEL GRADE BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/MODEL GROUP	AVERAGE RATE GPH	ESTIMATED FUEL USE (mil gal)	PERCENT STANDARD ERROR
CNTRAR101	343.2	13.4	13.4
CONAERLA4	5.0	0.0	37.5
CURTISROBIN	3.0	0.0	60.6
CVAC 240	11.1	0.0	34.0
CVAC BT13	0.0	0.0	0.0
CVAC STC580	0.0	0.0	0.0
DART G	0.0	0.0	0.0
DHAV DHC2	0.0	0.0	0.0
DHAV DHC6	0.0	0.0	0.0
DHAVXXDH82	0.0	0.0	0.0
DOUG DC3	0.0	0.0	0.0
EAGLEBAX7 (*)	(*)	(*)	(*)
EMB 110	0.0	0.0	0.0
FLEET 16B	0.0	0.0	0.0
FRCHLD24	8.0	0.1	35.6
GLASER300 (*)	(*)	(*)	(*)
GLASFLH301	2.5	0.0	34.6
GROB ASTIR	0.0	0.0	0.0
GRUMAVAA1	0.0	0.0	0.0
GRUMAVG164	10.0	0.9	14.2
GULSTM112	16.2	0.1	78.0

5.3 1989 GENERAL AVIATION TOTAL FUEL CONSUMED AND AVERAGE FUEL CONSUMPTION RATE  
BY FUEL GRADE BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/MODEL GROUP	AVERAGE RATE GPH	ESTIMATED FUEL USE (mil gal)	PERCENT STANDARD ERROR
GULSTM560	28.6	1.3	47.4
GULSTM690TC	42.7	2.7	31.9
GULSTMAA5	78.3	6.0	24.5
GULSTMG44	514.6	37.3	16.5
HELIO H391	0.0	0.0	0.0
HSPAVNHA200	0.0	0.0	0.0
HWKSLYDH104	0.0	0.0	0.0
INTRCP200	243.7	16.9	13.8
LEAR 35	245.4	11.5	15.9
LKHEED1329	203.2	9.4	12.6
LKHEEDPV1	0.0	0.0	0.0
MAULE M5	0.0	0.0	0.0
MEYERSOTW	12.3	0.1	39.2
MNCUP90	0.0	0.0	0.0
MOONEYM20	4.1	0.0	20.2
MTBSIMU300	0.0	0.0	0.0
NATBAL752 (*)	4.0	0.0	14.4
NORD 3202	12.0	0.0	45.8
PICARDAX6	0.0	0.0	0.0
PIPER J2	0.0	0.0	0.0
PIPER J5	4.8	0.6	20.6

5.3 1989 GENERAL AVIATION TOTAL FUEL CONSUMED AND AVERAGE FUEL CONSUMPTION RATE  
BY FUEL GRADE BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/MODEL GROUP	AVERAGE RATE GPH	ESTIMATED FUEL USE (mil gal)	PERCENT STANDARD ERROR
PIPER PA18	0.0	0.0	0.0
PIPER PA23	5.6	0.2	22.6
PIPER PA28	11.2	5.1	16.6
PIPER PA31T	39.2	5.2	13.2
PIPER PA36	15.4	9.9	9.2
PIPER PA44	6.3	2.0	25.5
RAVEN RX6 (*)	16.0	0.8	11.6
RAVEN S57 (*)	(*)	(*)	(*)
RKWELL500	0.0	0.0	0.0
RYAN STA	0.0	0.0	0.0
SCHLERASK21	0.0	0.0	0.0
SCHLERASW20	0.0	0.0	0.0
SOCATATEB20	0.0	0.0	0.0
SUPAC V	12.0	0.0	42.5
SWRNGNSA26	90.0	9.2	25.0
TCRAFTBC	4.5	0.0	21.3
TEMCO 11A	4.2	0.0	32.5
TME SONNAVION	0.0	0.0	0.0
TRYTEKK	0.0	0.0	0.0
UNIVAR415	9.3	0.3	29.4
WACO ASO	4.0	0.0	29.1

5.3 1989 GENERAL AVIATION TOTAL FUEL CONSUMED AND AVERAGE FUEL CONSUMPTION RATE  
BY FUEL GRADE BY SDR MANUFACTURER/MODEL GROUP  
(EXCLUDES ROTORCRAFT)

MANUFACTURER/MODEL GROUP	AVERAGE RATE GPH	ESTIMATED FUEL USE (mil gal)	PERCENT STANDARD ERROR
WACO UPF7	7.0	0.0	42.4
WTHRLY201	0.0	0.0	0.0
TOTALS (*)	53.4	1004.4	0.0

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.  
FOR ADDITIONAL INFORMATION, SEE APPENDIX B FOR SDR GROUP NAMES AND FAA MANUFACTURER/MODEL CODES.  
(\*) PROPANE FUEL DATA WERE NOT SUFFICIENT FOR REASONABLE COMPUTATIONAL PURPOSES AND WERE NOT INCLUDED.

## CHAPTER VI

### AIRFRAME HOURS AND ENGINE ACTIVITY

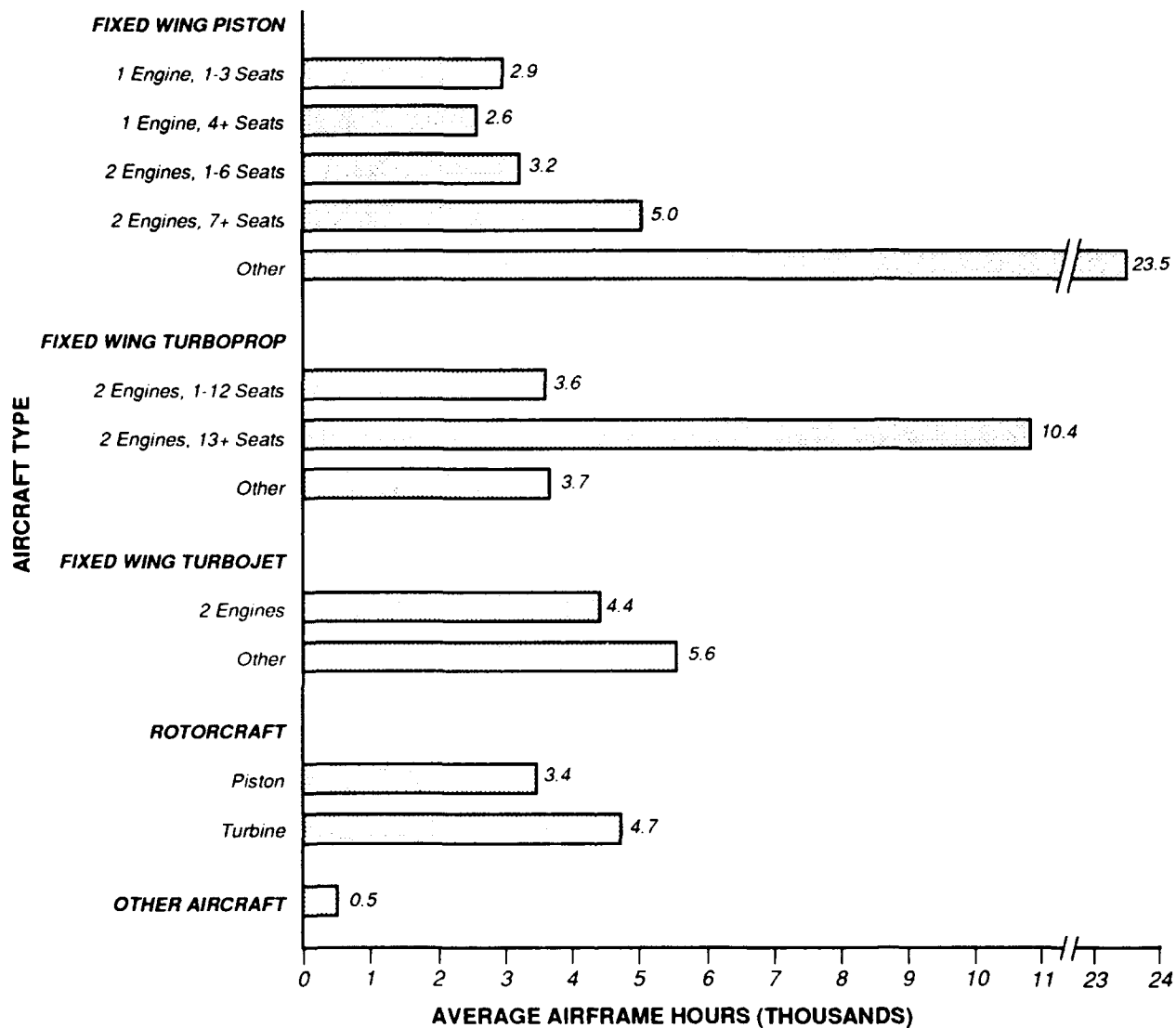
The subject of aircraft aging is becoming increasingly important because of recent questions raised about the safety of commercial air carriers relative to the age of their aircraft. Similar questions might be asked of the general aviation fleet. Data in this chapter can serve as input to studies correlating age and safety.

This chapter presents three tables and one figure. Table 6.1 gives data on the average airframe hours per active aircraft by aircraft type. Tables 6.2 and 6.3 show the average airframe hours per active aircraft by SDR Aircraft Manufacturer/Model Group, and the number of engines on active aircraft and the average hours per engine for each aircraft by engine SDR Manufacturer/Model Group, respectively. Figure 6.1 graphically displays the data provided in Table 6.1.

Major findings of this chapter include:

- o The average lifetime airframe hours for the active general aviation population is approximately 2,879 hours.
- o The fixed wing, piston other aircraft type averaged the most airframe hours, 23,542, with an estimated active aircraft population of only 86. In contrast, the total active piston population of over 193,800 averaged 2,840 airframe hours per active aircraft. Table 6.2 presents similar statistics.
- o The average hours per engine data presented in Table 6.3 vary considerably among the different aircraft engine manufacturers.

**Figure 6.1**  
**1989 GENERAL AVIATION AVERAGE AIRFRAME HOURS**  
**PER ACTIVE AIRCRAFT BY AIRCRAFT TYPE**



**SOURCE:** Table 6.1

6.1 1989 GENERAL AVIATION AVERAGE AIRFRAME HOURS PER ACTIVE AIRCRAFT  
BY AIRCRAFT TYPE

PAGE 1 OF 2

AIRCRAFT TYPE	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
FIXED WING									
FIXED WING - PISTON									
1 ENG: 1-3 SEATS	87,836	62,618	1.2	71.3	0.9	184,385,696	3.0	2,924.4	2.8
1 ENG: 4+ SEATS	120,246	107,752	0.6	89.6	0.5	282,562,880	2.0	2,618.6	1.8
1 ENGINE: TOTAL	208,082	170,370	0.6	81.9	0.5	466,948,608	1.7	2,729.6	1.6
2 ENG: 1-6 SEATS	17,838	15,927	1.5	89.3	1.3	52,057,416	3.4	3,237.7	2.8
2 ENG: 7+ SEATS	8,690	7,432	1.9	85.5	1.6	40,520,952	5.9	4,954.9	5.2
2 ENGINE: TOTAL	26,528	23,359	1.2	88.1	1.0	92,578,344	3.2	3,731.0	2.6
PISTON: OTHER	194	86	33.7	44.3	14.9	1,621,143	17.4	23,541.7	5.2
PISTON: TOTAL	234,804	193,815	0.5	82.5	0.4	561,148,160	1.5	2,840.3	1.4
FIXED WING - TURBOPROP									
2 ENG: 1-12 SEATS	5,082	4,888	1.4	96.2	1.4	17,477,206	4.2	3,551.1	4.2
2 ENG: 13+ SEATS	1,442	1,206	5.0	83.6	4.2	13,080,226	12.5	10,430.9	13.0
2 ENGINE: TOTAL	6,524	6,093	1.5	93.4	1.4	30,557,434	5.9	4,829.7	5.8
TURBOPROP: OTHER	352	230	14.3	65.3	9.4	941,652	29.5	3,725.5	12.9
TURBOPROP: TOTAL	6,876	6,324	1.5	92.0	1.4	31,499,088	5.8	4,787.9	5.7



6.1 1989 GENERAL AVIATION AVERAGE AIRFRAME HOURS PER ACTIVE AIRCRAFT  
BY AIRCRAFT TYPE

PAGE 2 OF 2

AIRCRAFT TYPE	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
FIXED WING - TURBOJET									
2 ENGINE: TOTAL	4,209	4,004	1.4	95.1	1.3	17,393,042	4.9	4,351.8	4.9
TURBOJET: OTHER	527	398	8.3	75.5	6.3	2,900,617	20.8	5,631.9	28.5
TURBOJET: TOTAL	4,736	4,402	1.5	92.9	1.4	20,293,658	5.2	4,467.4	5.4
FIXED WING: TOTAL	246,416	204,540	0.5	83.0	0.4	612,940,992	1.4	2,916.2	1.3
ROTORCRAFT									
PISTON	5,784	3,244	1.2	56.1	0.7	11,342,816	2.1	3,402.3	1.6
TURBINE	4,685	4,232	0.4	90.3	0.4	20,029,318	1.1	4,749.0	1.0
ROTORCRAFT: TOTAL	10,469	7,475	0.6	71.4	0.4	31,372,130	1.1	4,191.2	0.9
OTHER	10,306	7,721	2.4	74.9	1.8	4,139,622	7.2	527.4	7.6
TOTAL	267,191	219,737	0.5	82.2	0.4	648,452,800	1.3	2,878.5	1.3

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

6.2 1989 GENERAL AVIATION AVERAGE AIRFRAME HOURS PER ACTIVE AIRCRAFT  
BY SDR AIRCRAFT MANUFACTURER/MODEL GROUP

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MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
OTHER 1	17,615	10,580	4.5	60.1	2.7	6,663,245	22.4	629.8	21.9
OTHER 2	1,866	1,415	7.4	75.8	5.6	1,988,273	21.3	1,405.6	20.0
OTHER 3	304	166	40.6	54.5	22.1	1,237,320	51.3	7,467.7	31.4
OTHER 4	252	237	14.7	94.0	13.8	3,467,989	39.8	14,642.0	37.0
OTHER 5	114	30	92.4	26.7	24.6	217,041	92.6	7,139.5	6.3
OTHER 6	413	364	8.5	88.2	7.5	1,367,324	14.6	3,754.4	11.9
OTHER 7	319	293	15.1	91.7	13.9	1,929,317	67.7	6,594.1	66.0
OTHER 8	150	57	56.9	37.8	21.5	431,256	62.0	7,604.9	24.7
OTHER 9	394	366	6.4	92.9	6.0	1,705,135	17.2	4,660.1	15.9
OTHER 10	258	185	16.1	71.8	11.6	1,266,880	47.3	6,843.1	44.4
OTHER 11	1,916	653	3.5	34.1	1.2	310,841	12.0	476.1	11.5
OTHER 12	255	202	2.7	79.3	2.1	823,293	8.5	4,069.2	8.1
OTHER 13	3,438	2,549	4.9	74.1	3.5	937,642	23.5	367.9	22.9
ADAMS A50S	136	112	9.1	82.6	7.5	24,110	13.1	214.6	9.5
AERORSJ2	38	20	13.3	51.7	6.9	4,444	17.4	226.4	11.2
AEROSPAS355	109	108	0.6	99.0	0.6	407,886	3.6	3,780.5	3.5
AEROSPAS316	91	61	6.4	67.4	4.3	364,387	8.8	5,945.0	6.1
AGUSTA205	32	30	3.4	95.0	3.2	226,074	7.8	7,436.6	7.0
AGUSTAA109	66	66	0.0	100.0	0.0	69,510	7.0	1,053.2	7.0
AIRPTSA	213	131	17.4	61.4	10.7	392,106	23.0	2,999.3	15.1
AIRSPC18	23	15	14.9	64.3	9.6	6,661	22.3	450.5	16.7

6.2 1989 GENERAL AVIATION AVERAGE AIRFRAME HOURS PER ACTIVE AIRCRAFT  
BY SDR AIRCRAFT MANUFACTURER/MODEL GROUP

PAGE 2 OF 18

MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
AIRTRCAT300	436	403	5.9	92.4	5.4	976,310	11.5	2,422.3	9.9
AIRTRCAT400	60	60	0.0	100.0	0.0	124,391	16.4	2,073.2	16.4
AIRTRCAT500	38	37	6.5	96.9	6.3	23,980	20.5	651.4	19.5
AMD FALC10	125	121	4.5	96.9	4.3	414,936	16.9	3,424.3	16.3
AMD FALC20	188	182	4.1	97.1	4.0	1,235,859	16.9	6,772.9	16.4
AMD FALC50	123	102	11.6	82.9	9.6	301,730	15.4	2,960.6	10.1
AMTR TMK	22	14	30.9	62.5	19.3	9,350	30.9	680.0	0.0
ARCRNEH37	45	0	0.0	0.0	0.0	0	0.0	0.0	0.0
ARCTICS1A	89	49	17.3	55.4	9.6	150,767	21.4	3,056.0	12.6
ARCTICS1B1	23	14	14.9	60.0	8.9	17,940	21.7	1,300.0	15.7
ARONCA15	202	135	9.3	66.6	6.2	314,629	11.4	2,339.0	6.7
ARONCA58	150	60	18.7	40.3	7.5	140,131	20.3	2,319.5	7.7
ARONCA65	147	97	18.7	65.7	12.3	366,633	22.3	3,795.7	12.1
ARONCAC3	58	13	28.2	22.8	6.4	19,913	31.9	1,507.4	14.8
AVIANWFALCON	27	5	141.8	20.0	28.4	1,380	143.3	255.5	20.5
AVIANWSKYHWK	46	37	12.3	80.7	9.9	9,684	26.9	260.8	23.9
AYRES S2	824	757	6.5	91.9	6.0	3,672,791	11.5	4,889.4	9.5
BAG E206	24	14	39.4	60.0	23.7	59,328	47.0	4,120.0	25.5
BAG DH125	73	73	0.0	100.0	0.0	307,529	6.6	4,212.7	6.6
BALWKSFIREFY	1,732	1,421	6.3	82.1	5.2	350,554	11.5	246.7	9.6
BBAVIA11	826	542	12.6	65.7	8.3	1,050,495	18.2	1,936.8	13.1

6.2 1989 GENERAL AVIATION AVERAGE AIRFRAME HOURS PER ACTIVE AIRCRAFT  
BY SDR AIRCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
BBAVIA7	3,526	2,131	8.3	60.4	5.0	9,172,024	28.6	4,303.3	27.4
BBAVIA8	220	178	9.1	80.9	7.4	285,281	15.7	1,603.6	12.8
BEECH 100	229	229	0.0	100.0	0.0	1,039,472	11.6	4,539.2	11.6
BEECH 17	208	88	16.3	42.5	6.9	174,340	18.9	1,973.7	9.5
BEECH 18	803	478	16.7	59.5	10.0	4,761,701	20.8	5,836.4	12.4
BEECH 1900	106	106	0.0	100.0	0.0	879,271	27.0	8,295.0	27.0
BEECH 200	809	809	0.0	100.0	0.0	2,736,221	9.9	3,382.2	9.9
BEECH 23	2,708	2,583	2.2	95.4	2.1	6,220,806	6.7	2,408.3	6.3
BEECH 300	163	163	0.0	100.0	0.0	304,500	19.5	1,868.1	19.5
BEECH 33	1,961	1,928	1.2	98.3	1.2	4,707,913	7.0	2,442.4	6.9
BEECH 35	6,785	6,300	2.2	92.9	2.1	20,718,866	4.3	3,288.6	3.7
BEECH 36	2,363	2,288	2.0	96.8	2.0	4,331,013	14.6	1,892.5	14.5
BEECH 45	303	230	8.1	76.0	6.1	1,351,818	12.9	5,868.8	10.1
BEECH 50	326	142	41.6	43.6	18.1	886,808	46.7	6,245.5	21.1
BEECH 55	2,191	2,024	3.7	92.4	3.4	6,132,336	8.6	3,030.5	7.7
BEECH 56	58	52	5.3	89.8	4.8	165,925	13.6	3,186.2	12.5
BEECH 58	1,529	1,496	2.2	97.8	2.1	3,887,537	9.8	2,598.8	9.6
BEECH 60	414	377	10.3	91.0	9.3	822,447	16.4	2,183.0	12.8
BEECH 65	123	85	32.5	69.5	22.6	383,610	35.7	4,488.5	14.8
BEECH 76	280	277	1.7	98.9	1.7	455,079	8.5	1,642.8	8.4
BEECH 77	235	232	2.1	98.6	2.1	458,944	6.9	1,980.0	6.6

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MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
BEECH 80	153	142	10.9	92.7	10.1	734,854	30.0	5,182.5	27.9
BEECH 90	1,093	997	5.5	91.2	5.0	4,604,215	12.3	4,617.9	11.0
BEECH 95	454	436	3.5	96.1	3.4	1,585,761	5.5	3,636.0	4.2
BEECH 99	135	100	20.8	73.9	15.4	2,029,764	25.2	20,347.3	14.2
BELL 204	26	22	5.2	84.3	4.4	150,004	7.7	6,846.6	5.7
BELL 206	1,900	1,810	0.3	95.3	0.3	10,127,654	1.1	5,596.1	1.0
BELL 212	117	106	3.1	90.2	2.8	910,447	6.0	8,626.7	5.1
BELL 222	83	70	2.5	84.3	2.1	172,941	4.2	2,472.3	3.4
BELL 412	61	61	0.0	100.0	0.0	328,385	7.5	5,383.4	7.5
BELL 47	838	579	2.3	69.1	1.6	3,681,220	3.3	6,354.6	2.3
BLANCA11	80	50	7.5	62.7	4.7	80,802	9.0	1,610.1	4.9
BLANCA1413	263	105	14.6	39.8	5.8	233,589	31.9	2,233.2	28.4
BLANCA1419	269	204	13.5	75.8	10.2	413,843	16.5	2,028.8	9.5
BLANCA17	1,013	954	3.4	94.2	3.2	2,465,901	26.4	2,583.9	26.2
BLANCA7	2,326	1,864	4.4	80.1	3.5	3,498,449	10.0	1,892.8	8.9
BLANCA8	464	403	8.5	86.9	7.4	433,809	14.3	1,076.3	11.5
BNORM BN2	94	52	19.9	55.6	11.0	453,753	24.1	8,688.9	13.7
BOEING727	22	22	0.0	100.0	0.0	829,180	0.0	37,690.0	0.0
BOEING75	1,922	845	11.8	44.0	5.2	4,155,089	18.0	4,918.8	13.6
BOLKMS105	175	171	1.9	97.7	1.9	682,276	10.5	3,989.1	10.4
BOLKMS117	113	110	2.9	97.2	2.8	124,113	12.6	1,129.8	12.3

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MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
BRAERODH125	115	115	0.0	100.0	0.0	98,044	18.3	852.6	18.3
BRASOVIS28	51	46	6.1	89.8	5.4	29,270	10.3	638.8	8.3
BRWSTFLEET2	28	10	30.7	35.7	11.0	34,960	32.5	3,496.0	10.7
BRWSTFLEET7	21	9	25.9	43.7	11.3	27,842	28.4	3,030.4	11.8
BUKER 131	30	18	23.3	60.0	14.0	31,944	27.3	1,774.6	14.3
CAMRONMODELO	30	30	0.0	100.0	0.0	3,183	7.7	106.1	7.7
CAMRONMODELO	239	184	9.9	77.1	7.6	37,196	16.2	202.0	12.8
CASA C212	40	33	18.1	83.3	15.0	227,829	51.1	6,834.9	47.8
CESSNA120	857	668	10.0	77.9	7.8	2,295,284	14.3	3,438.2	10.2
CESSNA140	2,357	1,637	6.8	69.4	4.8	5,629,382	10.7	3,439.5	8.2
CESSNA150	18,589	15,697	2.4	84.4	2.0	61,102,000	6.2	3,892.5	5.7
CESSNA170	2,479	1,948	6.8	78.6	5.4	5,676,492	8.1	2,913.7	4.4
CESSNA172	24,568	23,060	1.1	93.9	1.1	70,645,368	4.8	3,063.6	4.6
CESSNA175	1,300	956	9.4	73.5	6.9	2,032,097	11.0	2,125.6	5.8
CESSNA177	2,809	2,686	2.5	95.6	2.4	6,647,108	15.2	2,474.7	15.0
CESSNA180	2,760	2,490	3.8	90.2	3.4	7,117,629	7.4	2,858.1	6.4
CESSNA182	13,742	12,828	1.5	93.3	1.4	29,390,942	3.6	2,291.1	3.2
CESSNA185	1,580	1,321	5.3	83.6	4.5	3,072,390	13.2	2,326.6	12.1
CESSNA188	1,611	1,459	5.5	90.5	5.0	4,236,601	8.6	2,904.6	6.6
CESSNA190	85	63	7.4	74.1	5.5	172,815	12.1	2,745.1	9.6
CESSNA195	507	376	6.2	74.1	4.6	1,179,639	7.5	3,141.2	4.1

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MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
CESSNA205	239	222	5.1	93.1	4.7	1,024,133	25.2	4,603.3	24.7
CESSNA206	2,681	2,387	4.5	89.0	4.0	9,188,973	25.4	3,849.2	25.0
CESSNA207	331	106	94.0	32.1	30.2	612,028	94.7	5,752.0	11.1
CESSNA208	105	101	11.3	95.8	10.8	119,988	26.0	1,181.3	25.5
CESSNA210	5,915	5,633	2.1	95.2	2.0	11,387,946	5.3	2,021.7	4.9
CESSNA303	156	156	0.0	100.0	0.0	258,742	12.9	1,658.6	12.9
CESSNA305	280	219	8.5	78.3	6.7	1,222,357	17.0	5,577.7	14.7
CESSNA310	3,063	2,717	4.5	88.7	3.9	8,568,255	8.6	3,154.0	7.3
CESSNA320	312	287	3.0	92.0	2.8	1,060,073	5.0	3,691.1	3.9
CESSNA335	43	43	0.0	100.0	0.0	128,717	43.4	2,993.4	43.4
CESSNA336	72	43	15.7	59.1	9.3	96,661	16.7	2,271.6	5.7
CESSNA337	1,118	1,021	3.8	91.4	3.5	2,263,586	9.1	2,216.3	8.3
CESSNA340	902	872	3.4	96.7	3.3	1,767,430	10.4	2,027.2	9.8
CESSNA401	220	214	5.0	97.3	4.9	917,694	12.1	4,288.7	11.0
CESSNA402	620	450	13.0	72.5	9.5	3,048,922	17.8	6,780.1	12.1
CESSNA404	126	121	10.2	96.1	9.8	788,767	22.4	6,513.8	19.9
CESSNA411	130	53	30.0	41.0	12.3	181,494	31.1	3,402.1	8.0
CESSNA414	759	748	2.0	98.5	2.0	2,022,137	5.8	2,701.4	5.5
CESSNA421	1,179	1,146	3.2	97.2	3.1	3,175,322	8.4	2,771.1	7.7
CESSNA425	182	182	0.0	100.0	0.0	525,770	22.7	2,888.8	22.7
CESSNA441	220	220	0.0	100.0	0.0	570,441	7.9	2,592.9	7.9

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MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
CESSNA500	627	557	7.0	88.8	6.2	2,091,287	12.2	3,754.6	10.1
CESSNA501	258	258	0.0	100.0	0.0	711,877	11.4	2,759.2	11.4
CESSNA650	141	141	0.0	100.0	0.0	262,807	7.0	1,863.9	7.0
CESSNA750	68	19	29.8	27.8	8.3	50,313	31.5	2,658.6	10.1
CESSNAUC94	31	16	30.0	52.6	15.8	37,178	31.7	2,278.7	10.1
CHILD S1	57	55	6.1	97.2	5.9	36,116	22.2	651.7	21.4
CHILD S2	163	151	5.8	92.8	5.4	142,444	15.3	941.2	14.1
CHRIS HUSKY	54	49	5.2	91.2	4.7	8,954	18.8	181.9	18.1
CNDALRCL600	127	116	8.1	91.5	7.4	158,132	24.6	1,361.0	23.3
CNTRAR101	34	34	0.0	100.0	0.0	13,234	12.6	389.2	12.6
COMWTH185	109	47	18.4	42.8	7.9	81,108	23.8	1,737.1	15.2
CONAERLA4	456	421	4.7	92.3	4.3	399,006	9.6	948.5	8.4
CURTISJR	24	4	60.1	15.4	9.2	2,238	67.4	606.0	30.7
CURTISROBIN	32	4	70.9	12.5	8.9	6,800	70.9	1,700.0	0.0
CURTISTRVAIR	179	36	27.6	19.9	5.5	148,700	31.6	4,174.0	15.3
CVAC 240	43	3	57.6	8.1	12.7	21,372	163.4	6,163.0	43.1
CVAC 340	24	3	154.9	11.8	18.2	0	0.0	0.0	0.0
CVAC BT13	114	31	35.9	27.3	9.8	61,870	39.4	1,985.6	16.3
CVAC L13	20	3	57.4	14.2	8.1	580	76.5	204.1	50.5
CVAC STC580	66	39	31.1	59.0	18.4	955,466	37.9	24,547.5	21.6
CVAC STC600	26	0	0.0	0.0	0.0	0	0.0	0.0	0.0



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MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
DART G	26	3	42.5	12.2	5.2	2,224	42.5	700.0	0.0
DHAV DHC1	104	66	19.5	63.2	12.3	503,305	37.6	7,662.5	32.2
DHAV DHC2	237	174	9.6	73.4	7.0	1,687,990	12.7	9,698.1	8.4
DHAV DHC3	40	38	12.9	94.4	12.2	370,056	20.0	9,795.6	15.3
DHAV DHC4	32	4	245.3	11.1	27.3	26,276	245.3	7,390.0	0.0
DHAV DHC6	97	94	3.9	96.5	3.7	1,948,401	9.3	20,817.0	8.4
DHAV DHC7	26	0	0.0	0.0	0.0	0	0.0	0.0	0.0
DHAV DHC8	25	25	0.0	100.0	0.0	10,638	5.5	425.5	5.5
DHAVXXDH82	81	51	22.2	63.5	14.1	143,242	27.5	2,785.3	16.3
DORNERD0228	32	32	0.0	100.0	0.0	131,392	34.4	4,106.0	34.4
DOUG A26	30	14	22.7	45.8	10.4	54,472	26.6	3,961.6	14.0
DOUG DC3	410	267	7.8	65.2	5.1	7,025,129	14.9	26,287.7	12.8
DOUG DC4	80	55	13.1	69.2	9.0	1,404,103	14.1	25,371.7	5.3
EAGLE DW	71	54	17.9	76.2	13.6	72,080	26.7	1,332.5	19.8
EAGLEBAX7	21	18	12.9	83.3	10.8	4,321	22.8	246.9	18.8
EAGLEBC7	77	65	7.4	84.2	6.2	12,212	13.2	188.4	11.0
EIRVON20	114	106	3.5	93.4	3.3	81,550	10.0	766.2	9.3
EMB 110	73	70	13.0	95.7	12.4	953,031	15.8	13,648.6	9.0
EMB 120	50	50	0.0	100.0	0.0	215,315	23.1	4,306.3	23.1
ENSTRMF28	421	330	2.2	78.5	1.7	451,611	5.8	1,371.5	5.3
FLEET 16B	24	13	27.0	53.8	14.5	22,132	32.2	1,712.6	17.5

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FOKKERF27	22	18	36.2	83.3	30.2	188,412	36.2	10,277.0	0.0
FRCHLD22	20	9	29.6	46.2	13.6	13,951	31.4	1,511.4	10.7
FRCHLD24	288	108	15.1	37.3	5.6	209,255	17.0	1,936.9	8.4
FRCHLDC119	29	0	0.0	0.0	0.0	0	0.0	0.0	0.0
FRCHLDF27	23	17	15.9	75.0	11.9	397,241	25.3	23,028.4	19.7
FRCHLDM62	224	111	14.5	49.8	7.2	266,867	23.7	2,394.0	18.8
GALAXYGX7	43	43	0.0	100.0	0.0	2,422	13.1	56.3	13.1
GENBALAX6	59	27	32.3	46.3	14.9	7,904	33.4	289.5	8.7
GLASER300	22	12	31.0	52.9	16.4	3,066	31.6	263.2	6.1
GLASER400	34	34	0.0	100.0	0.0	8,169	30.2	240.3	30.2
GLASFL201	34	29	6.8	84.7	5.8	24,688	9.8	856.9	7.0
GLASFLH301	111	80	10.5	72.5	7.6	108,367	13.5	1,346.3	8.5
GROB 103CAT	57	54	7.0	94.4	6.6	49,603	20.2	921.4	18.9
GROB 109	64	64	0.0	100.0	0.0	33,547	10.8	524.2	10.8
GROB ASTIR	59	51	7.0	86.2	6.1	34,022	12.2	669.1	9.9
GRTLKS2T1	184	107	19.0	57.9	11.0	75,536	22.3	709.2	11.7
GRUMANSAL6	59	22	47.6	37.3	17.8	74,036	47.3	3,094.3	24.2
GRUMAVAA1	555	460	8.6	82.9	7.1	762,591	13.7	1,657.5	10.6
GRUMAVAA5	1,040	975	4.0	93.8	3.8	1,952,916	13.2	2,002.5	12.6
GRUMAVG1159	35	26	18.1	74.2	13.4	119,210	19.3	4,590.7	6.8
GRUMAVG164	1,152	1,014	7.8	88.1	6.9	4,259,614	11.5	4,199.0	8.4

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GRUMAVG21	51	51	0.0	100.0	0.0	1,236,230	60.8	24,239.8	60.8
GRUMAVTBM	36	26	11.5	71.6	8.2	80,312	15.7	3,115.2	10.7
GULSTM112	651	544	7.3	83.6	6.1	837,155	10.5	1,538.7	7.5
GULSTM500	297	297	0.0	100.0	0.0	1,183,205	17.3	3,983.9	17.3
GULSTM520	47	34	23.7	71.4	16.9	174,915	31.6	5,210.2	20.9
GULSTM560	110	90	18.2	82.1	15.0	753,626	26.1	8,340.5	18.6
GULSTM680	295	268	11.4	91.0	10.4	1,323,235	28.0	4,928.7	25.6
GULSTM680TP	96	88	6.3	92.1	5.8	422,440	9.9	4,777.6	7.6
GULSTM690TC	25	25	0.0	100.0	0.0	58,388	6.7	2,335.5	6.7
GULSTM690TP	384	384	0.0	100.0	0.0	1,218,010	11.1	3,171.9	11.1
GULSTMAA1	580	474	9.2	81.7	7.5	778,591	15.1	1,642.9	11.9
GULSTMAA5	628	569	5.9	90.6	5.4	991,142	11.7	1,742.1	10.1
GULSTMG1159	253	220	9.1	87.0	7.9	776,696	24.1	3,528.9	22.3
GULSTMG159	102	71	16.5	70.1	11.6	1,059,391	18.1	14,822.7	7.3
GULSTMGA4	90	76	8.7	84.7	7.4	472,046	16.4	6,192.3	13.9
GULSTMGA7	30	11	47.1	35.7	16.8	150,303	48.3	14,048.5	10.9
GULSTMGA7	49	49	0.0	100.0	0.0	95,198	11.8	1,942.8	11.8
H23/HTE	36	12	22.9	32.1	7.3	41,877	35.8	3,624.0	27.5
H34/55	29	3	35.2	11.4	4.0	18,793	35.6	5,670.4	5.2
HELIO H295	98	85	7.4	86.4	6.4	247,649	18.1	2,923.9	16.5
HELIO H391	23	20	17.4	85.8	14.9	63,481	26.4	3,216.2	19.9

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MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
HILLERFH1100	64	29	20.7	45.2	9.4	80,818	26.6	2,791.4	16.6
HILLERUH12	585	373	3.0	63.8	1.9	1,741,752	5.2	4,671.5	4.3
HSPAVNHA200	25	19	23.4	75.0	17.6	26,047	64.3	1,389.2	59.9
HUGHES269	676	476	2.0	70.4	1.4	2,157,514	3.4	4,535.3	2.7
HUGHES369	600	551	1.0	91.8	0.9	2,370,203	4.8	4,304.2	4.7
HWKSLYDH104	33	17	46.9	50.0	23.4	77,550	46.9	4,700.0	0.0
HWKSLYDH125	182	182	0.0	100.0	0.0	1,068,354	17.2	5,870.1	17.2
HYNES B2	126	53	10.2	41.9	4.3	203,979	43.9	3,862.6	42.6
INTRCP200	32	27	12.9	83.3	10.8	174,870	46.7	6,557.6	44.8
ISRAEL1121	98	85	10.4	87.0	9.1	496,442	13.1	5,825.6	7.9
ISRAEL1123	22	22	0.0	100.0	0.0	68,594	6.1	3,117.9	6.1
ISRAEL1124	214	206	4.5	96.5	4.4	766,897	9.8	3,715.4	8.7
JEMSTRDGA15	85	45	15.5	52.4	8.1	72,085	22.3	1,617.5	16.0
LAIKEN10	37	0	0.0	0.0	0.0	0	0.0	0.0	0.0
LEAR 23	49	37	30.9	75.0	23.2	341,926	41.6	9,304.1	27.8
LEAR 24	166	166	0.0	100.0	0.0	1,067,768	8.2	6,432.3	8.2
LEAR 25	237	237	0.0	100.0	0.0	1,215,812	12.5	5,130.0	12.5
LEAR 35	410	410	0.0	100.0	0.0	2,219,200	26.9	5,412.7	26.9
LEAR 55	105	101	5.3	95.8	5.1	275,836	11.4	2,741.2	10.1
LET L13	155	130	7.1	83.9	6.0	172,844	12.5	1,329.1	10.3
LKHEED1329	78	77	3.1	98.3	3.1	429,683	11.5	5,605.4	11.1

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MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
LKHEED18	61	54	21.0	88.9	18.6	460,587	33.3	8,494.4	25.8
LKHEEDP2V	26	26	0.0	100.0	0.0	251,622	1.6	9,677.8	1.6
LKHEEDPV1	35	0	0.0	0.0	0.0	0	0.0	0.0	0.0
LKHEEDT33	46	12	44.3	26.1	11.5	73,145	45.4	6,095.4	10.0
LUSCOM8	2,142	1,154	10.0	53.9	5.4	2,957,119	14.0	2,561.5	9.8
MACDOUG369	61	61	0.0	100.0	0.0	71,631	6.0	1,174.3	6.0
MARTIN404	30	2	180.4	7.7	13.9	138,462	180.4	60,000.0	0.0
MAULE M4	269	163	22.1	60.7	13.4	268,676	31.0	1,645.6	21.7
MAULE M5	440	293	22.0	66.6	14.6	1,040,110	47.6	3,548.0	42.2
MAULE M6	68	68	0.0	100.0	0.0	36,777	34.3	540.8	34.3
MCLISHFUNKB	148	64	15.9	43.5	6.9	100,514	18.1	1,562.0	8.7
MEYERSOTW	47	29	13.7	62.5	8.6	68,589	18.0	2,335.0	11.6
MILITARY204	201	142	6.3	70.8	4.5	775,646	7.7	5,447.9	4.4
MILITARY47	395	235	3.7	59.4	2.2	1,291,724	5.3	5,454.5	3.8
MNC0UP90	65	16	19.3	24.9	4.8	24,763	20.8	1,529.0	7.7
MNMITEM18	138	61	13.9	44.3	6.1	76,887	15.2	1,257.0	6.2
MODFD47	53	37	10.8	70.4	7.6	143,523	20.6	3,848.2	17.5
MOONEYM20	6,433	5,709	3.0	88.7	2.7	12,545,253	5.5	2,197.5	4.6
MRCHTIS205	45	24	27.5	53.0	14.6	25,382	31.1	1,065.1	14.4
MTSBSIMU2	306	282	9.1	92.3	8.4	1,125,805	13.3	3,985.3	9.6
MTSBSIMU300	75	75	0.0	100.0	0.0	132,217	9.3	1,762.9	9.3

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MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
MULTCD16	42	23	21.5	54.5	11.7	69,430	28.6	3,030.7	18.9
NAMER B25	50	12	63.1	25.0	15.8	65,425	68.6	5,234.0	27.0
NAMER F51	147	81	14.1	55.4	7.8	160,100	22.5	1,966.5	17.6
NAMER NA260	189	107	10.2	56.5	5.8	975,675	13.4	9,144.6	8.7
NAMER T6	577	475	6.9	82.3	5.7	2,939,613	10.6	6,190.7	8.0
NATEAL752	33	33	0.0	100.0	0.0	11,063	12.8	335.2	12.8
NAVAL N3N	119	52	37.3	43.5	16.2	287,145	39.8	5,552.3	13.8
NAVIONNAVION	582	395	13.6	67.9	9.2	1,486,961	24.5	3,761.3	20.4
NORD 3202	26	6	58.5	21.4	12.5	6,593	58.5	1,183.3	0.9
NORD SV4	46	29	17.1	62.6	10.7	189,945	47.2	6,594.8	44.0
NORMST65	57	23	14.5	40.5	5.9	63,223	16.6	2,739.7	8.1
ORLHELH19	73	44	33.5	60.3	20.2	288,718	35.5	6,554.1	11.6
ORLHEL58	33	11	60.3	33.3	20.1	27,500	60.3	2,500.0	0.0
PARTENP68	36	32	4.7	87.5	4.1	67,780	8.1	2,151.8	6.6
PICARDAX6	142	43	22.8	30.6	7.0	17,208	29.7	396.2	19.0
PILATSB4	27	24	8.8	89.5	7.9	24,041	36.8	995.1	35.8
PIPER 600	370	341	6.8	92.1	6.3	450,126	13.9	1,320.3	12.1
PIPER J2	59	18	28.0	30.4	8.5	33,291	34.0	1,854.0	19.4
PIPER J3	4,295	2,332	7.0	54.3	3.8	9,347,945	13.9	4,009.3	12.0
PIPER J4	242	84	15.6	34.8	5.4	187,793	19.9	2,227.7	12.3
PIPER J5	341	193	5.3	56.6	3.0	651,054	12.6	3,371.1	11.5

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MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
PIPER PA12	1,357	848	10.8	62.5	6.7	2,419,465	18.1	2,852.2	14.6
PIPER PA14	105	8	187.2	7.4	13.8	22,691	193.9	2,932.9	50.7
PIPER PA15	184	111	13.1	60.2	7.9	173,411	16.4	1,565.6	9.8
PIPER PA16	367	196	11.7	53.5	6.3	738,352	53.5	3,760.9	52.2
PIPER PA17	104	67	15.7	64.2	10.1	136,803	19.6	2,049.6	11.6
PIPER PA18	3,638	3,001	3.3	82.5	2.7	9,895,432	11.9	3,297.8	11.4
PIPER PA20	450	190	19.6	42.3	8.3	353,619	24.2	1,856.6	14.2
PIPER PA22	4,738	3,253	6.4	68.7	4.4	8,453,318	8.0	2,601.3	5.0
PIPER PA23	3,277	2,753	5.4	84.0	4.5	11,359,067	9.1	4,126.8	7.3
PIPER PA24	3,161	2,718	4.4	86.0	3.8	9,270,541	6.4	3,410.6	4.7
PIPER PA25	1,099	941	7.0	85.6	6.0	3,495,226	10.3	3,713.9	7.5
PIPER PA28	22,051	21,065	1.0	95.5	0.9	57,103,464	4.2	2,706.1	4.1
PIPER PA30	1,246	1,246	0.0	100.0	0.0	5,044,071	10.6	4,048.2	10.6
PIPER PA31	1,787	1,747	1.2	97.8	1.2	7,365,176	8.2	4,140.8	8.5
PIPER PA31T	519	519	0.0	100.0	0.0	1,437,160	8.6	2,769.1	8.6
PIPER PA32	4,273	4,212	1.2	98.6	1.2	9,594,393	5.7	2,278.0	5.6
PIPER PA34	1,867	1,752	3.8	93.8	3.5	4,452,619	7.2	2,541.3	6.1
PIPER PA36	318	252	11.7	79.3	9.3	581,570	16.7	2,305.9	11.9
PIPER PA38	1,235	1,181	2.7	95.6	2.6	3,184,063	7.4	2,696.6	6.9
PIPER PA42	98	98	0.0	100.0	0.0	182,546	5.9	1,862.7	5.9
PIPER PA44	304	303	1.6	99.6	1.6	591,273	16.6	1,952.8	16.5

6.2 1989 GENERAL AVIATION AVERAGE AIRFRAME HOURS PER ACTIVE AIRCRAFT  
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MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
PIPER PA46	294	283	4.3	96.1	4.1	205,457	10.2	726.9	9.3
PROPTJ200	69	49	10.8	70.9	7.7	91,499	12.3	1,870.4	5.8
RAVEN RX6	192	73	21.0	38.1	8.0	18,078	23.2	247.1	10.0
RAVEN S50	82	22	31.3	27.1	8.5	3,280	36.3	147.7	18.3
RAVEN S55	768	479	16.6	62.3	10.3	95,533	28.6	199.5	23.3
RAVEN S57	66	66	0.0	100.0	0.0	7,146	18.8	108.3	18.8
RAVEN S60	229	152	21.3	66.2	14.1	33,985	28.6	224.3	19.1
RAVEN S66	51	37	30.3	73.3	22.2	14,569	36.3	389.5	19.9
RKWELL500	30	30	0.0	100.0	0.0	115,314	13.4	3,843.8	13.4
RKWELL700	23	21	10.7	91.7	9.8	35,663	17.3	1,691.5	13.6
RKWELLNA265	290	289	1.4	99.5	1.4	1,832,436	10.4	6,350.8	10.3
ROBSINR22	408	395	0.6	96.9	0.6	636,350	7.7	1,609.8	7.7
ROLSCHLS	125	119	4.8	94.9	4.5	71,945	16.7	606.8	16.0
RYAN ST3	168	111	27.9	66.0	18.4	228,746	43.4	2,061.6	33.3
RYAN STA	33	19	24.8	57.1	14.2	15,482	30.2	821.0	17.3
SAAB SF340	42	16	45.3	39.1	17.7	83,409	62.4	5,075.2	42.8
SCHEMPDISCUS	44	44	0.0	100.0	0.0	12,475	19.1	283.5	19.1
SCHLERASK21	31	31	0.0	100.0	0.0	33,248	11.4	1,072.5	11.4
SCHLERASW15	35	33	5.3	93.1	4.9	37,755	9.0	1,158.6	7.3
SCHLERASW19	57	57	0.0	100.0	0.0	33,262	13.2	583.5	13.2
SCHLERASW20	90	90	0.0	100.0	0.0	55,433	13.1	615.9	13.1



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MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
SCHLERK8	23	19	9.3	81.0	7.6	19,945	14.0	1,071.2	10.4
SCHLERKA6	69	58	10.8	83.7	9.1	50,203	21.4	869.1	18.5
SCHWZH269	54	48	2.0	89.6	1.8	55,947	6.2	1,156.0	5.8
SCWZERG164	213	150	16.1	70.3	11.3	761,957	18.3	5,092.1	8.7
SCWZERSG1	745	534	4.1	71.7	2.9	615,614	15.7	1,153.3	15.2
SCWZERSG2	549	417	8.2	75.9	6.2	861,942	19.3	2,068.4	17.5
SEMCO MODELT	29	4	76.9	14.3	11.0	839	80.5	202.5	23.9
SKRSKYS55	34	7	55.0	20.0	11.0	41,273	55.5	6,069.5	6.8
SKRSKYS58	72	35	17.9	48.6	8.7	164,166	20.5	4,692.4	9.9
SKRSKYS58T	38	27	11.2	71.4	8.0	253,763	13.3	9,349.2	7.2
SKRSKYS61	28	14	6.7	49.6	3.3	150,953	8.5	10,869.3	5.3
SKRSKYS76	175	167	1.0	95.6	0.9	654,475	3.4	3,913.1	3.3
SLINDS100	295	226	12.7	76.7	9.7	259,445	19.4	1,146.0	14.7
SMITH 600	353	343	3.7	97.1	3.6	1,102,870	14.4	3,217.9	13.9
SNIAS 350	271	255	1.1	94.0	1.0	877,252	7.5	3,442.6	7.4
SNIAS SA318	21	0	0.0	0.0	0.0	0	0.0	0.0	0.0
SNIAS SA341	29	20	15.4	68.7	10.6	59,919	20.8	3,009.4	14.0
SOCATAMS894	37	19	31.9	52.2	16.7	14,488	34.7	750.5	13.5
SOCATARALLYE	21	21	0.0	100.0	0.0	17,854	9.9	850.2	9.9
SOCATATB10	52	52	0.0	100.0	0.0	17,752	25.1	341.4	25.1
SOCATATB20	124	124	0.0	100.0	0.0	90,158	18.8	727.1	18.8

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MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
SPHRTHCIRRUS	95	83	8.8	87.5	7.7	95,261	14.3	1,145.6	11.3
SPHRTHNIMBUS	52	47	10.7	90.9	9.8	35,966	28.7	760.8	26.6
SPHRTHVENTUS	44	44	0.0	100.0	0.0	18,861	14.3	428.7	14.3
STBROSSD3	75	38	61.1	50.0	30.6	714,388	63.3	19,050.3	16.5
STNSON10	157	24	21.9	15.6	3.4	49,185	23.2	2,007.6	7.6
STNSONJR	20	0	0.0	0.0	0.0	0	0.0	0.0	0.0
STNSONL5	121	43	20.2	35.6	7.2	82,982	23.2	1,926.1	11.3
STNSONSR9	26	4	41.9	15.0	6.3	9,379	43.7	2,405.0	12.4
STNSONV77	108	46	28.2	42.4	12.0	80,027	34.4	1,747.6	19.6
STOLAMEC3	217	115	16.6	53.0	8.8	152,943	20.5	1,330.0	12.0
SUPAC LA	99	28	14.6	28.7	4.2	68,132	35.6	2,399.0	32.5
SUPAC V	28	0	0.0	0.0	0.0	0	0.0	0.0	0.0
SWRNGNSA226	177	168	7.0	94.9	6.7	1,508,565	27.3	9,548.8	25.4
SWRNGNSA227	84	84	0.0	100.0	0.0	317,349	23.9	3,778.0	23.9
SWRNGNSA26	82	80	4.6	97.8	4.5	394,696	9.7	4,922.8	8.6
TCRAFKD	297	120	16.1	40.2	6.5	237,408	17.9	1,986.3	7.9
TCRAFTA	33	9	22.9	26.9	6.2	21,323	24.3	2,400.0	7.9
TCRAFTBC	1,865	1,100	11.1	59.0	6.5	3,013,407	22.9	2,740.6	20.1
TCRAFTBF	41	21	20.2	51.5	10.4	176,429	36.6	8,353.1	30.5
TCRAFTBL	216	71	32.3	32.7	10.6	154,220	34.7	2,180.9	12.5
TEMCO 11A	27	13	26.1	48.3	12.6	24,629	27.5	1,889.5	8.6

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MANUFACTURER/ MODEL GROUP	AIRCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
TH55	60	42	3.8	70.1	2.6	331,409	5.6	7,874.6	4.1
THUNDRAX7	86	60	21.4	69.2	14.8	16,478	32.4	276.8	24.3
TMP SONNAVION	633	421	8.6	66.6	5.8	1,165,708	10.5	2,766.7	5.9
TOMCAT	38	24	13.1	63.8	8.3	91,204	19.4	3,762.3	14.4
TRYTEK65	345	155	14.3	45.0	6.4	791,276	38.4	5,102.3	35.6
TRYTEKK	28	8	47.9	29.4	14.1	13,939	50.2	1,692.6	14.8
UNIVACGC1	679	409	12.9	60.2	7.8	909,204	29.3	2,222.5	26.3
UNIVAR108	2,006	1,142	12.4	56.9	7.0	3,466,081	25.9	3,034.9	22.8
UNIVAR415	2,402	1,630	8.0	67.8	5.4	3,666,229	23.7	2,249.6	22.3
VALENT17	22	22	0.0	100.0	0.0	6,527	27.7	296.7	27.7
VARGA 2150	131	121	7.1	92.3	6.6	129,934	22.2	1,074.5	21.0
WACO ASO	29	8	27.7	28.6	7.9	35,745	43.1	4,314.0	33.0
WACO GXE	35	5	32.9	14.8	4.9	12,444	32.9	2,400.0	0.0
WACO R	35	13	28.3	35.9	10.2	42,038	40.7	3,341.6	29.3
WACO UPF7	159	95	7.7	60.0	4.6	342,094	8.9	3,586.8	4.4
WACO YK	53	16	25.8	30.5	7.9	43,197	29.1	2,673.3	13.4
WSK M18	37	31	11.0	85.0	9.5	54,643	24.5	1,737.5	21.9
WTHRLY201	63	47	12.9	75.2	9.7	144,440	14.3	3,050.3	6.2
TOTAL	267,191	219,737	0.5	82.2	0.4	648,452,736	1.3	2,878.5	1.3

6.3 1989 NUMBER OF ENGINES ON ACTIVE GENERAL AVIATION AIRCRAFT AND AVERAGE HOURS PER ENGINE  
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ENGINE MANUFACTURER/ MODEL GROUP	ESTIMATE OF ACTIVE ENGINES	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
FLLSN 250C	1,492	0.1	93.8	515	1.1
ALLSN 501D	65	17.0	64.2	430	14.3
AMTRMCMCULH	71	50.2	43.9	18	31.2
ARSRCHTFE731	18,103	2.5	68.2	265	6.1
ARSRCHTPE331	116	8.3	28.1	42	19.5
CFMINTCFM56	167	4.3	85.3	168	9.9
CONT 6285	33	22.0	70.8	170	24.8
CONT 975	8	0.0	100.0	407	21.3
CONT A40	43	54.9	25.9	22	81.6
CONT A50	1	86.5	15.7	10	0.0
CONT A65	5,870	4.3	55.2	52	8.9
CONT A75	1,175	9.4	64.3	51	14.0
CONT A80	6	0.0	30.9	47	7.7
CONT C125	286	15.4	62.2	96	25.9
CONT C145	1,629	6.9	74.1	71	15.3
CONT C85	3,521	5.9	58.2	61	8.1
CONT C90	2,019	5.0	76.2	69	10.4
CONT E185	1,303	6.8	77.0	70	13.2

6.3 1989 NUMBER OF ENGINES ON ACTIVE GENERAL AVIATION AIRCRAFT AND AVERAGE HOURS PER ENGINE  
BY ENGINE SDR MANUFACTURER/MODEL GROUP

PAGE 2 OF 5

ENGINE MANUFACTURER/ MODEL GROUP	ESTIMATE OF ACTIVE ENGINES	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
CONT E225	1,563	5.6	89.8	76	13.5
CONT O200	13,959	2.6	83.6	128	9.5
CONT O300	8,507	1.9	93.2	104	10.5
CONT O346	492	13.4	91.8	63	23.2
CONT O360	2,872	3.1	88.6	113	8.8
CONT O470	15,703	1.8	88.8	95	4.4
CONT O520	24,090	0.8	95.3	184	3.2
CONT R670	151	17.5	60.6	35	32.0
DHAVXXGIPSY	65	19.4	58.1	39	30.6
FCD 6440	244	11.8	61.1	49	22.2
FRNKLN4AC150	8	257.5	9.1	30	0.0
FRNKLN4AC176	94	32.0	44.2	16	18.7
FRNKLN4AC199	47	22.5	22.6	62	36.1
FRNKLN6A4150	483	15.0	49.4	51	15.1
FRNKLN6A4165	730	14.4	64.1	457	50.5
FRNKLN6A4200	6	0.0	89.9	118	21.4
FRNKLN6A8215	77	18.7	44.6	26	40.8
FRNKLN6AV335	63	8.4	69.2	79	17.8

6.3 1989 NUMBER OF ENGINES ON ACTIVE GENERAL AVIATION AIRCRAFT AND AVERAGE HOURS PER ENGINE  
BY ENGINE SDR MANUFACTURER/MODEL GROUP

PAGE 3 OF 5

ENGINE MANUFACTURER/ MODEL GROUP	ESTIMATE OF ACTIVE ENGINES	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
FRNKLN6AV350	148	19.5	68.1	151	14.1
FRNKLN6V4	129	5.4	59.3	156	10.7
FRNKLN6V6245	14	0.0	100.0	594	2.1
FRNKLN6VS335	404	1.8	95.0	387	5.4
GE CF6	867	2.0	95.1	466	9.7
GE CF700	149	13.4	84.6	247	6.9
GE CJ610	540	3.6	96.4	398	7.9
GE CJ805	33	0.0	96.0	257	8.8
GE CJ805F	27	0.0	74.3	1,294	5.1
GE CT58	13	0.0	75.6	53	8.2
GLADENK5	73	77.8	41.8	29	3.2
GLADENR5	160	23.9	49.8	34	16.9
JACOBPR755	153	19.6	56.3	106	30.0
JACOBSR755	20	0.0	51.2	43	12.0
LYC 0540	87	11.7	97.3	26	23.5
LYC LTS101	147	0.0	100.0	343	13.3
LYC O145	738	3.1	91.1	460	3.6
LYC O235	9,471	6.5	79.2	163	36.0

6.3 1989 NUMBER OF ENGINES ON ACTIVE GENERAL AVIATION AIRCRAFT AND AVERAGE HOURS PER ENGINE  
BY ENGINE SDR MANUFACTURER/MODEL GROUP

PAGE 4 OF 5

ENGINE MANUFACTURER/ MODEL GROUP	ESTIMATE OF ACTIVE ENGINES	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
LYC O290	2,970	2.2	84.4	274	6.8
LYC O320	28,411	8.4	64.8	53	13.2
LYC O340	68	0.0	89.6	157	4.8
LYC O360	8,777	72.0	35.3	32	19.3
LYC O435	128	0.0	92.5	112	4.7
LYC O480	265	62.7	30.8	148	23.2
LYC O540	11,725	11.4	68.0	151	14.7
LYC O541	751	0.0	95.0	174	4.6
LYC O720	75	0.0	86.0	145	8.2
LYC R680	118	13.8	90.2	221	28.1
LYC T53	22	26.8	32.6	38	29.3
MNASOC4	34	40.1	42.9	29	17.1
PCKARDV1650	272	21.4	50.7	66	19.0
PWA JT12	6	0.0	99.3	353	11.0
PWA JT15	21	0.0	96.1	477	8.6
PWA JT3C	3,038	0.0	100.0	334	6.5
PWA JT3D	31	0.0	98.6	474	5.2
PWA JT4	1,802	3.4	91.8	660	4.1

6.3 1989 NUMBER OF ENGINES ON ACTIVE GENERAL AVIATION AIRCRAFT AND AVERAGE HOURS PER ENGINE  
BY ENGINE SDR MANUFACTURER/MODEL GROUP

PAGE 5 OF 5

ENGINE MANUFACTURER/ MODEL GROUP	ESTIMATE OF ACTIVE ENGINES	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
PWA JT8	231	2.2	87.2	334	9.7
PWA JT9	31	0.0	79.0	165	13.2
PWA PT6	109	7.4	62.5	125	16.0
PWA PT6T	726	38.7	26.5	16	23.6
PWA R1340	41	0.0	67.2	298	9.5
PWA R1830	131	65.1	52.5	89	1.7
PWA R2000	12	0.0	60.7	397	8.6
PWA R2800	71	56.9	33.3	45	0.0
PWA R985	73	0.0	96.3	402	5.7
RROYCEDART	108	0.0	100.0	398	8.1
RROYCEGIPSY	82	0.0	98.9	448	4.1
RROYCETYN	3	0.0	75.3	405	9.1
RROYCEVIPER	20	92.1	28.6	200	0.0
ALL ENGINES	249,998	0.5	86.3	172	1.33

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

ENGINE MANUFACTURER/MODEL GROUPS FOR WHICH SEPARATE ESTIMATES ARE NOT AVAILABLE ARE NOT LISTED IN THE TABLE, BUT ARE INCLUDED IN THE "ALL ENGINES" ESTIMATES.

FOR ADDITIONAL INFORMATION, SEE APPENDIX C FOR SDR ENGINE GROUP NAMES AND FAA MANUFACTURER/MODEL CODES.



## CHAPTER VII

### AVIONICS

A major purpose of the survey is to determine what avionics equipment the general aviation fleet has on board its aircraft. This chapter presents the survey's findings with 21 tables of statistics and one figure. **Avionics data for rotorcraft were not collected in 1989.** Figure 7.1, Avionics Equipment in the 1989 General Aviation Aircraft Fleet, graphically depicts the percentages of the general aviation fleet using the types of avionics equipment represented in Tables 7.1, 7.5, 7.9, 7.13 and 7.17.

The avionics are divided into five groups of equipment: 1) VHF communications 2) precision approach and transponder equipment; 3) navigation equipment; 4) guidance and control equipment, and 5) emergency locator transponder equipment. Statistics on each of these groups of avionics equipment are given by four categories:

- 1) Aircraft Type, Tables 7.1, 7.5, 7.9, 7.13, and 7.17;
- 2) Primary Use, Tables 7.2, 7.6, 7.10, 7.14, and 7.18;
- 3) Region of Based Aircraft, Tables 7.3, 7.7, 7.11, 7.15, and 7.19 and;
- 4) State of Based Aircraft, Tables 7.4, 7.8, 7.12, 7.16, and 7.20.

Tables 7.1-7.4 contain survey results for the first group of equipment, VHF communications equipment. The 1988 survey was modified in format and content to capture additional avionics data. This year's survey was further refined to categorize portable and fixed communications equipment. The refinement appears to have caused some slight confusion in responses to the transponder questions. Therefore, the resulting 17 percent estimate for Mode S capability in 1988 and the 5.2 percent in 1989, along with other significant deviations from previous trends, such as the low estimate of overall transponder equipage, should be interpreted in that context.

The second group of avionics equipment, precision approach equipment, is presented in Tables 7.5-7.8. Precision approach equipment consists of localizers, marker beacons, glide slopes or a microwave landing system (MLS). Also included in this set of tables is information on transponder equipment capability within the general aviation fleet.

The third group of avionics equipment, shown in Tables 7.9-7.12, is navigation equipment. This group can be divided into three subcategories, basic navigation equipment, long range navigation equipment, and other navigation equipment. Basic navigation equipment consists of: Very high frequency Omnidirectional Radio ranges (VOR) with 100 channels, 200 channels, or two or more VOR; Automatic Direction Finder (ADF); Distance Measuring Equipment (DME); or Area Navigation (RNAV).

Long range navigation consists of: the Loran-C, which can be flown by Visual Flight Rules (VFR); Navigation Instrument Flight Rules (NAV IFR); Approach Instrument Flight Rules (APP IFR); the Omega - VLF; or some other type of long range navigation equipment (Doppler, INS, Other). The "other" navigation equipment category consists of radar altimeter, weather radar, and thunderstorm detection equipment.

Tables 7.13-7.16 comprise the fourth group of avionics equipment, Guidance and Control Equipment. This equipment includes flight directors, Electronic Flight Information Systems (EFIS), flight management computers, autopilot-axis controls (longitude, vertical, lateral and approach mode), automatic land, and flight data recorder. In 1988, data on autopilots were collected by 1, 2, and 3 axis. For 1989, autopilot data were collected in terms of longitude, vertical, lateral, and approach mode. Horizontal Situation Indicators (HSI) were not included in the 1989 survey.

Tables 7.17-7.20 comprise the fifth and last group of avionics equipment, Electrical System and Emergency Locator Transmitter (ELT) Equipment. Respondents were asked to indicate whether or not their aircraft was equipped with an electrical system and whether or not their aircraft had an emergency locator transmitter.

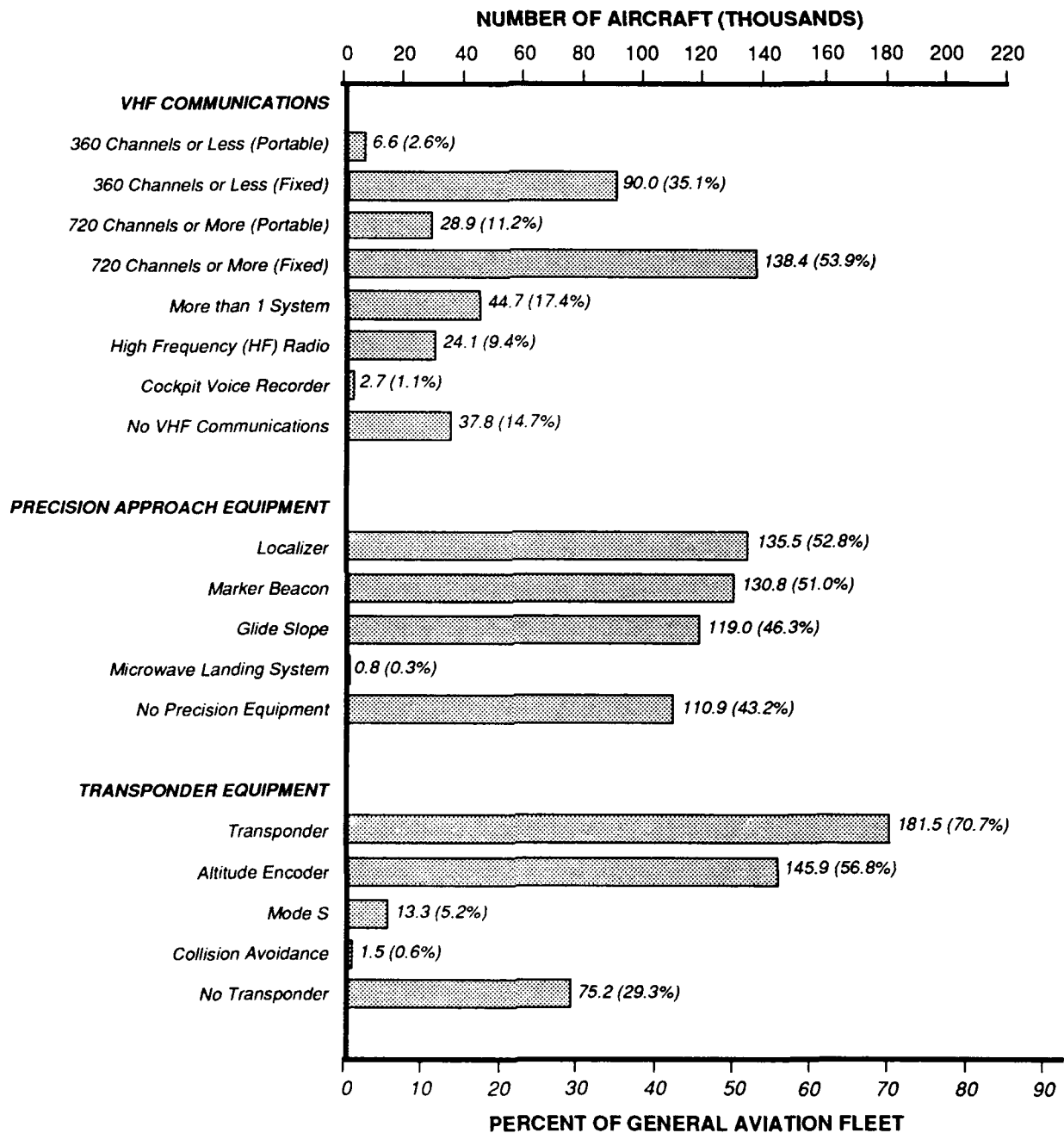
The last table in this chapter, Table 7.21, shows the estimated number of aircraft and total hours flown IFR--with and without--transponder equipment.

Some observations to be made from these tables are:

- o The avionics equipment capability of the general aviation fleet continues to become increasingly more sophisticated. The percent of the general aviation fleet with portable 720 channel communication equipment is over 1.7 times the percent of the fleet with portable 360 channel equipment capability. The percentage of the general aviation aircraft with altitude encoding equipment also increased by 13 percent, rising from 44 percent in 1988 to 57 percent in 1989.
- o The category "collision avoidance equipment" was included in this year's survey for the second time. This year, 0.6 percent of the fleet is estimated to have this capability. This figure is down from 1.3 percent in 1988. The estimated capabilities for transponders, Mode S and collision avoidance equipment may not be accurate, for some respondents confused Mode S capability with Mode A or Mode C, and others did not understand what was meant by collision avoidance equipment on the survey form. In order to improve these response rates, the FAA has redesigned the questions pertaining to transponder information in the 1990 General Aviation Activity and Avionics Survey.
- o More than half (56.8 percent) of the general aviation fleet (excluding rotorcraft) has some kind of precision approach equipment. Figures are evenly divided among the localizer, marker beacon, and glide slope categories. Only three-tenths of one percent (762 aircraft) have a microwave landing system.

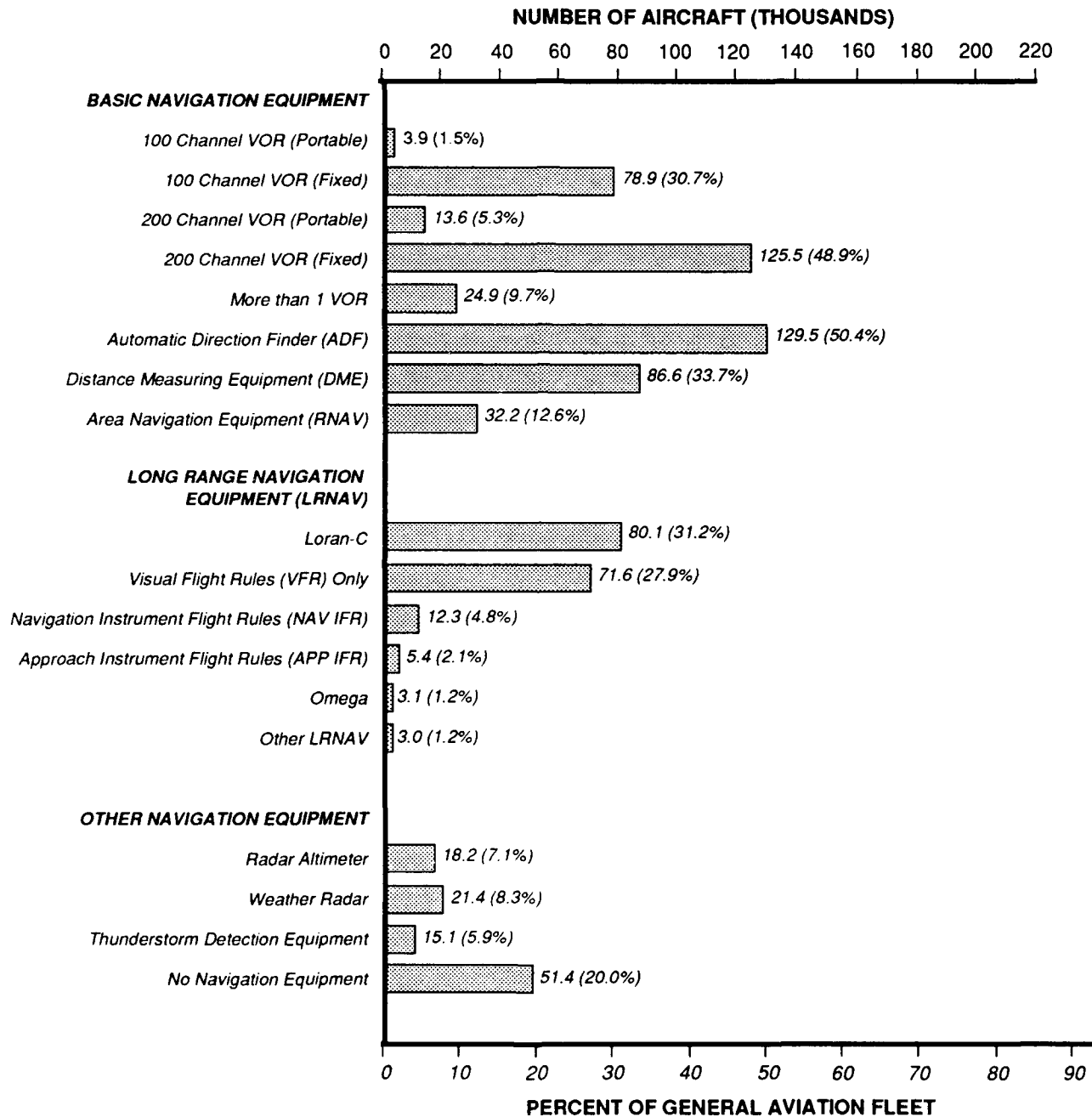
- o Aircraft used primarily for business or commuter purposes, such as the corporate, business, commuter air carrier and air taxi categories, have the highest estimates of the population with precision approach equipment. Aircraft in other use categories, such as personal, instructional, aerial application, and aerial observation, have less precision approach equipment.
- o All of the regions, with the exception of the Alaskan region, have relatively similar estimates of population size percentages with precision approach equipment. These percentages range from 49.6 percent to 64.2 percent. The Alaskan region has the lowest population with precision approach equipment, with an estimated 28.7 percent.
- o The most common precision approach equipment in the general aviation fleet is the localizer with 52.8 percent. The marker beacon is a close second with 51.0 percent of the general aviation fleet (excluding rotorcraft) with this capability.
- o As in 1988, more than three-fourths of the general aviation fleet has some type of navigation equipment.
- o The most popular kinds of navigation equipment are the ADF with 129,474 equipped aircraft and the 200 channel fixed VOR with 125,458 equipped aircraft.
- o In all categories, the percent of the fleet with long range navigation equipment did not change significantly from 1988 to 1989. The general aviation fleet (excluding rotorcraft) with Loran-C capability was 31.2 percent in 1989.
- o Aircraft with Omega capability declined from 1.8 to 1.2 percent. The other LRNAV category rose modestly from 0.9 to 1.2 percent. The Other Navigation Equipment subcategory did not change significantly from 1988's figure.
- o The estimated general aviation population with ELT capabilities in 1989 was 82 percent.
- o In 1989, more than 89,000 aircraft (including rotorcraft) were flown IFR, logging nearly 8.6 million hours as compared to 1988 when more than 85,000 aircraft were flown IFR, logging more than 7.7 million hours.
- o Nearly 86 percent of the general aviation fleet (excluding rotorcraft) have an electrical system.

**Figure 7.1**  
**AVIONICS EQUIPMENT IN THE**  
**1989 GENERAL AVIATION AIRCRAFT FLEET**



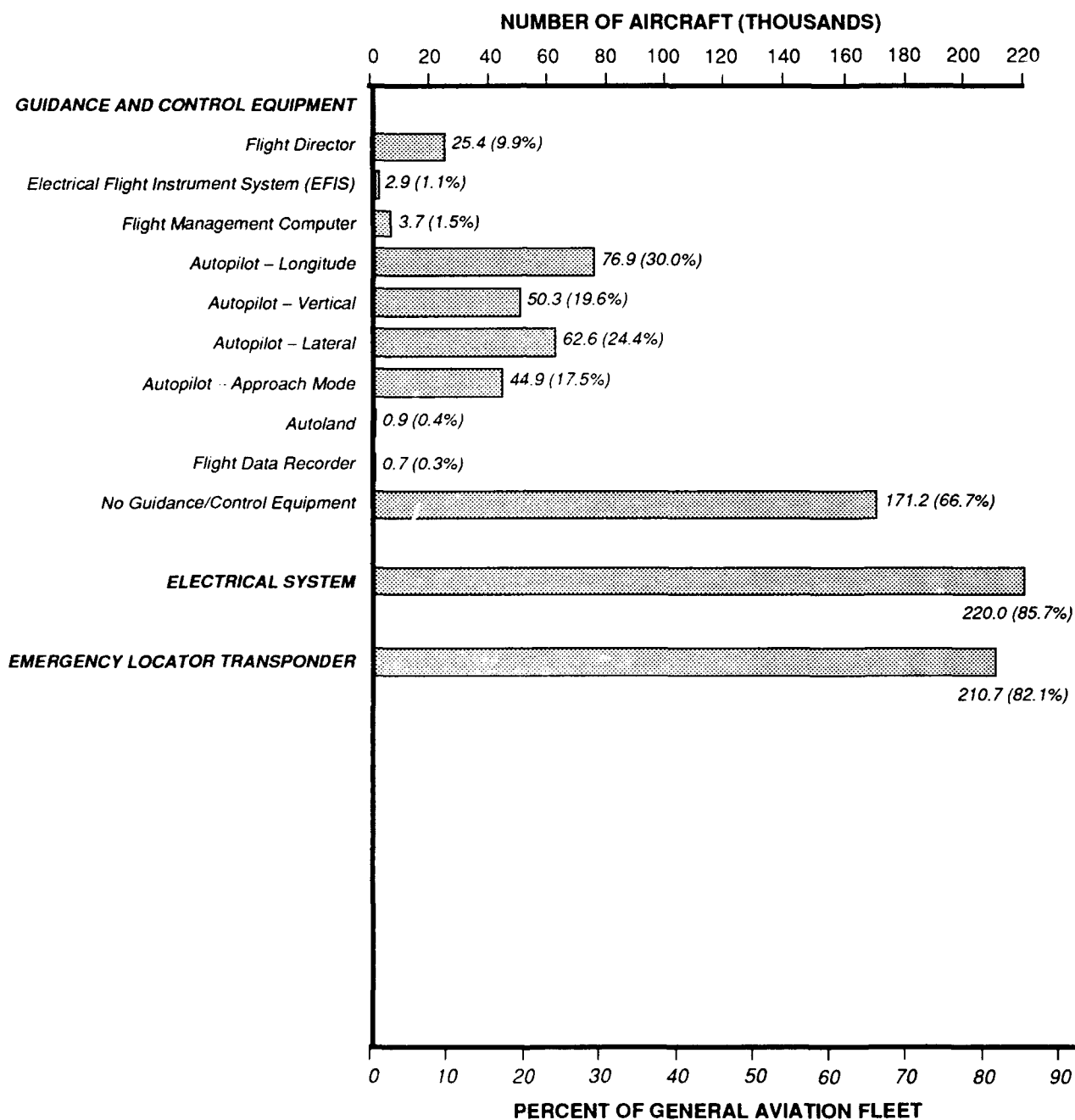
**SOURCE: Tables 7.1 and 7.5**

**Figure 7.1 (continued)**  
**AVIONICS EQUIPMENT IN THE**  
**1989 GENERAL AVIATION AIRCRAFT FLEET**



**SOURCE:** Table 7.9

**Figure 7.1 (continued)**  
**AVIONICS EQUIPMENT IN THE**  
**1989 GENERAL AVIATION AIRCRAFT FLEET**



**SOURCE:** Tables 7.13 and 7.17

7.1 1989 GENERAL AVIATION AIRCRAFT WITH VHF COMMUNICATIONS EQUIPMENT  
BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 3

VHF COMMUNICATIONS

AIRCRAFT TYPE	360 CH PORT	360 CH FXD	720 CH PORT	720 CH FXD	1+ SYS	HF RADIO	COCKPIT VOICE RECORDER	NO VHF
FIXED WING								
FIXED WING - PISTON								
1 ENG: 1-3 SEATS								
ESTIMATED POPULATION	3,110	28,641	12,115	25,522	8,044	4,984	155	26,307
% STANDARD ERROR	10.6	2.7	5.4	3.3	7.0	8.9	48.1	2.8
% WITH CAPABILITY	3.5	32.6	13.8	29.1	9.2	5.7	0.2	30.0
1 ENG: 4+ SEATS								
ESTIMATED POPULATION	2,007	50,919	10,581	80,191	28,678	12,428	729	5,876
% STANDARD ERROR	14.0	2.1	5.9	1.3	3.3	5.4	24.0	7.5
% WITH CAPABILITY	1.7	42.3	8.8	66.7	23.8	10.3	0.6	4.9
1 ENGINE: TOTAL								
ESTIMATED POPULATION	5,116	79,561	22,696	105,712	36,722	17,411	883	32,183
% STANDARD ERROR	8.5	1.7	4.0	1.2	3.0	4.6	21.5	2.7
% WITH CAPABILITY	2.5	38.2	10.9	50.8	17.6	8.4	0.4	15.5
2 ENG: 1-6 SEATS								
ESTIMATED POPULATION	354	5,394	1,831	13,782	4,218	1,532	53	827
% STANDARD ERROR	29.5	6.7	12.6	2.4	7.8	13.8	68.5	19.7
% WITH CAPABILITY	2.0	30.2	10.3	77.3	23.6	8.6	0.3	4.6
2 ENG: 7+ SEATS								
ESTIMATED POPULATION	172	2,210	467	7,179	1,677	833	107	534
% STANDARD ERROR	42.9	10.2	24.8	2.6	12.4	17.8	45.0	20.5
% WITH CAPABILITY	2.0	25.4	5.4	82.6	19.3	9.6	1.2	6.1
2 ENGINE: TOTAL								
ESTIMATED POPULATION	526	7,605	2,298	20,961	5,895	2,364	160	1,361
% STANDARD ERROR	24.3	5.6	11.3	1.8	6.6	10.9	37.7	14.4
% WITH CAPABILITY	2.0	28.7	8.7	79.0	22.2	8.9	0.6	5.1
PISTON: OTHER								
ESTIMATED POPULATION	0	10	0	162	4	2	15	19
% STANDARD ERROR	0.0	54.9	0.0	5.0	90.5	124.8	44.1	36.7
% WITH CAPABILITY	0.0	5.2	0.0	83.7	2.1	1.1	7.5	10.0
PISTON: TOTAL								
ESTIMATED POPULATION	5,642	87,175	24,994	126,836	42,621	19,778	1,058	33,563
% STANDARD ERROR	8.0	1.6	3.8	1.1	2.7	4.3	18.9	2.6
% WITH CAPABILITY	2.4	37.1	10.6	54.0	18.2	8.4	0.5	14.3

7.1 1989 GENERAL AVIATION AIRCRAFT WITH VHF COMMUNICATIONS EQUIPMENT  
BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 3

VHF COMMUNICATIONS

AIRCRAFT TYPE	360 CH PORT	360 CH FXD	720 CH PORT	720 CH FXD	1+ SYS	HF RADIO	COCKPIT VOICE REC'DER	NO VHF
FIXED WING - TURBOPROP								
2 ENG: 1-12 SEATS								
ESTIMATED POPULATION	70	862	461	4,587	1,024	557	69	182
% STANDARD ERROR	58.8	14.9	22.7	2.3	13.5	18.2	60.1	38.9
% WITH CAPABILITY	1.4	17.0	9.1	90.3	20.1	11.0	1.4	3.6
2 ENG: 13+ SEATS								
ESTIMATED POPULATION	4	179	10	1,234	83	234	269	89
% STANDARD ERROR	165.2	37.8	87.0	4.7	51.9	22.9	30.4	21.6
% WITH CAPABILITY	0.3	12.4	0.7	85.6	5.8	16.3	18.7	6.2
2 ENGINE: TOTAL								
ESTIMATED POPULATION	74	1,041	471	5,821	1,107	791	339	271
% STANDARD ERROR	56.4	14.0	22.2	2.0	13.1	14.5	27.1	27.0
% WITH CAPABILITY	1.1	16.0	7.2	89.2	17.0	12.1	5.2	4.2
TURBOPROP: OTHER								
ESTIMATED POPULATION	6	50	0	120	37	52	24	177
% STANDARD ERROR	149.3	62.8	0.0	28.5	77.2	59.8	102.1	20.5
% WITH CAPABILITY	1.8	15.3	0.0	36.7	11.4	16.0	7.3	54.2
TURBOPROP: TOTAL								
ESTIMATED POPULATION	80	1,031	471	5,941	1,145	843	363	448
% STANDARD ERROR	53.5	13.6	22.2	2.1	12.9	14.1	26.2	18.3
% WITH CAPABILITY	1.2	15.9	6.9	86.7	16.7	12.3	5.3	6.5
FIXED WING - TURBOJET								
2 ENGINE TURBOJET								
ESTIMATED POPULATION	90	489	291	3,929	717	2,118	1,155	105
% STANDARD ERROR	39.5	16.7	20.4	1.5	13.0	4.5	8.4	40.5
% WITH CAPABILITY	2.1	11.6	6.9	93.3	17.0	50.3	27.4	2.5
TURBOJET: OTHER								
ESTIMATED POPULATION	0	48	14	362	17	328	167	88
% STANDARD ERROR	0.0	50.5	82.4	9.6	68.1	10.5	19.0	33.3
% WITH CAPABILITY	0.0	9.1	2.6	68.7	3.3	62.2	31.6	16.7
TURBOJET: TOTAL								
ESTIMATED POPULATION	90	537	304	4,291	734	2,445	1,321	193
% STANDARD ERROR	39.5	15.9	19.8	1.6	12.8	4.1	7.7	26.8
% WITH CAPABILITY	1.9	11.3	6.4	90.6	15.5	51.6	27.9	4.1



7.1 1989 GENERAL AVIATION AIRCRAFT WITH VHF COMMUNICATIONS EQUIPMENT  
BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

PAGE 3 OF 3

AIRCRAFT TYPE	VHF COMMUNICATIONS							
	360 CH PORT	360 CH FXD	720 CH PORT	720 CH FXD	1+ SYS	HF RADIO	COCKPIT VOICE REC'DER	NO VHF
FIXED WING: TOTAL								
ESTIMATED POPULATION	5,812	88,803	25,770	137,068	44,500	23,066	2,741	34,205
* STANDARD ERROR	7.8	1.6	3.7	1.0	2.7	3.7	8.9	2.6
* WITH CAPABILITY	2.4	36.0	10.5	55.6	18.1	9.4	1.1	13.9
ROTORCRAFT								
PISTON								
ESTIMATED POPULATION	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
* STANDARD ERROR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
* WITH CAPABILITY	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TURBINE								
ESTIMATED POPULATION	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
* STANDARD ERROR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
* WITH CAPABILITY	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ROTORCRAFT: TOTAL								
ESTIMATED POPULATION	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
* STANDARD ERROR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
* WITH CAPABILITY	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OTHER								
ESTIMATED POPULATION	750	1,183	3,089	1,372	219	1,034	0	3,603
* STANDARD ERROR	18.6	10.7	7.6	9.9	30.9	14.2	0.0	6.6
* WITH CAPABILITY	7.3	11.5	30.0	13.3	2.1	10.0	0.0	35.0
TOTAL								
ESTIMATED POPULATION	6,562	89,986	28,858	138,440	44,719	24,100	2,741	37,808
* STANDARD ERROR	7.3	1.6	3.4	1.0	2.6	3.6	8.9	2.4
* WITH CAPABILITY	2.6	35.1	11.2	53.9	17.4	9.4	1.1	14.7

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

7.2 1989 GENERAL AVIATION AIRCRAFT WITH VHF COMMUNICATIONS EQUIPMENT  
BY PRIMARY USE  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 2

PRIMARY USE	VHF COMMUNICATIONS							
	360 CH PORT	360 CH FXD	720 CH PORT	720 CH FXD	1+ SYS	HF RADIO	COCKPIT VOICE RECORDER	NO VHF
CORPORATE								
ESTIMATED POPULATION	180	2,043	907	10,219	2,035	2,693	1,299	243
% STANDARD ERROR	40.2	11.8	15.5	4.0	10.7	6.6	10.4	34.0
% WITH CAPABILITY	1.6	17.6	7.8	88.1	17.5	23.2	11.2	2.1
BUSINESS								
ESTIMATED POPULATION	870	14,193	4,069	27,494	10,116	4,552	293	791
% STANDARD ERROR	19.3	5.0	9.5	3.3	5.9	8.9	33.4	20.5
% WITH CAPABILITY	2.4	38.4	1.0	74.3	27.3	12.3	0.8	2.1
PERSONAL								
ESTIMATED POPULATION	3,435	50,474	17,198	66,520	24,908	11,230	545	11,568
% STANDARD ERROR	10.1	2.4	4.4	1.9	3.8	5.8	26.9	4.9
% WITH CAPABILITY	2.8	40.8	13.9	53.8	20.1	9.1	0.4	9.3
INSTRUCTIONAL								
ESTIMATED POPULATION	357	6,416	683	11,748	2,588	1,379	104	612
% STANDARD ERROR	35.3	8.2	25.2	5.7	13.2	17.7	65.4	22.3
% WITH CAPABILITY	2.1	37.6	4.0	68.8	15.2	8.1	0.6	3.6
AERIAL APPLICATION								
ESTIMATED POPULATION	67	708	118	678	10	189	1	4,632
% STANDARD ERROR	59.4	23.1	52.0	22.3	128.9	50.0	279.3	4.3
% WITH CAPABILITY	1.1	11.3	1.9	10.8	0.2	3.0	0.0	74.0
AERIAL OBSERVATION								
ESTIMATED POPULATION	34	1,465	442	3,078	734	349	24	220
% STANDARD ERROR	69.1	16.0	24.8	11.1	22.6	29.9	62.7	31.3
% WITH CAPABILITY	0.8	32.5	9.8	68.2	16.3	7.7	0.5	4.9
OTHER WORK USE								
ESTIMATED POPULATION	82	344	699	644	109	162	4	144
% STANDARD ERROR	64.6	30.4	20.1	24.0	61.3	46.2	149.1	42.2
% WITH CAPABILITY	4.5	18.9	38.4	35.3	6.0	8.9	0.2	7.9
COMMUTER AIR CARRIER								
ESTIMATED POPULATION	5	193	14	1,218	109	137	19	14
% STANDARD ERROR	246.9	32.8	155.5	12.5	43.5	48.1	39.9	53.4
% WITH CAPABILITY	0.3	13.4	1.0	84.7	7.6	9.5	1.3	1.0

7.2 1989 GENERAL AVIATION AIRCRAFT WITH VHF COMMUNICATIONS EQUIPMENT  
BY PRIMARY USE  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 2

VHF COMMUNICATIONS

PRIMARY USE	360 CH PORT	360 CH FXD	720 CH PORT	720 CH FXD	1+ SYS	HF RADIO	COCKPIT VOICE RECORDER	NO VHF
AIR TAXI								
ESTIMATED POPULATION	24	1,331	86	4,837	856	441	111	66
% STANDARD ERROR	121.7	15.3	57.9	7.4	18.2	26.1	43.5	56.4
% WITH CAPABILITY	0.4	24.3	1.6	88.1	15.6	8.0	2.0	1.2
OTHER								
ESTIMATED POPULATION	78	561	311	2,418	372	438	53	327
% STANDARD ERROR	43.9	22.0	33.6	11.3	32.9	21.6	47.4	37.0
% WITH CAPABILITY	2.3	16.9	9.4	72.8	11.2	13.2	1.6	9.8
INACTIVE								
ESTIMATED POPULATION	1,170	12,313	4,127	8,949	3,024	2,202	201	20,118
% STANDARD ERROR	17.9	4.3	9.8	5.7	11.3	11.9	27.9	3.0
% WITH CAPABILITY	2.6	27.8	9.3	20.2	6.8	5.0	0.5	45.5
TOTAL								
ESTIMATED POPULATION	6,562	89,986	28,858	138,440	44,719	24,100	2,741	37,808
% STANDARD ERROR	7.3	1.6	3.4	1.0	2.6	3.6	8.9	2.4
% WITH CAPABILITY	2.6	35.1	11.2	53.9	17.4	9.4	1.1	14.7

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

7.3 1989 GENERAL AVIATION AIRCRAFT WITH VHF COMMUNICATIONS EQUIPMENT  
BY REGION OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 2

REGION	VHF COMMUNICATIONS										NO VHF
	360 CH PORT	360 CH FXD	720 CH PORT	720 CH FXD	1+ SYS	HF RADIO	COCKPIT VOICE REC'DER				
ALASKAN											
ESTIMATED POPULATION	310	3,946	859	4,015	1,305	481	40				459
% STANDARD ERROR	28.9	8.7	19.0	8.8	15.9	21.6	101.7				24.9
% WITH CAPABILITY	3.7	47.4	10.3	48.2	15.7	5.8	0.5				5.5
CENTRAL											
ESTIMATED POPULATION	224	4,871	1,192	5,952	1,563	1,386	55				3,079
% STANDARD ERROR	37.5	9.2	17.4	7.9	16.1	16.7	44.3				11.0
% WITH CAPABILITY	1.6	35.0	8.6	42.7	11.2	9.9	0.4				22.1
EASTERN											
ESTIMATED POPULATION	482	9,647	3,859	16,716	6,434	2,963	549				4,268
% STANDARD ERROR	27.0	6.3	10.2	4.6	7.9	10.6	21.6				8.8
% WITH CAPABILITY	1.7	34.0	13.6	58.9	22.7	10.4	1.9				15.0
GREAT LAKES											
ESTIMATED POPULATION	926	15,613	5,483	23,712	7,900	4,390	599				7,748
% STANDARD ERROR	19.9	4.9	8.5	3.9	7.0	9.0	17.6				6.5
% WITH CAPABILITY	2.0	34.2	12.0	52.0	17.3	9.6	1.3				17.0
NEW ENGLAND											
ESTIMATED POPULATION	303	3,188	1,469	6,325	2,088	680	76				1,121
% STANDARD ERROR	35.8	11.1	16.4	7.8	14.0	23.5	65.5				17.4
% WITH CAPABILITY	3.0	31.2	14.4	61.9	20.4	6.7	0.7				11.0
NORTHWEST MOUNTAIN											
ESTIMATED POPULATION	640	9,832	2,962	12,326	3,955	2,023	78				3,544
% STANDARD ERROR	23.1	6.2	11.3	5.5	10.0	13.6	45.8				9.8
% WITH CAPABILITY	2.5	38.8	11.7	48.6	15.6	8.0	0.3				14.0
SOUTHERN											
ESTIMATED POPULATION	1,415	14,619	4,328	23,229	7,035	3,696	379				4,527
% STANDARD ERROR	15.8	5.1	9.4	3.8	7.2	9.8	25.3				8.8
% WITH CAPABILITY	3.5	35.8	10.6	56.9	17.2	9.0	0.9				11.1
SOUTHWESTERN											
ESTIMATED POPULATION	676	11,913	3,236	17,828	5,556	3,562	220				5,386
% STANDARD ERROR	25.2	5.8	10.8	4.4	8.3	10.3	32.2				7.7
% WITH CAPABILITY	2.0	35.6	9.7	53.2	16.6	10.6	0.7				16.1

7.3 1989 GENERAL AVIATION AIRCRAFT WITH VHF COMMUNICATIONS EQUIPMENT  
BY REGION OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

REGION	VHF COMMUNICATIONS								NO VHF
	360 CH PORT	360 CH FXD	720 CH PORT	720 CH FXD	1+ SYS	HF RADIO	COCKPIT VOICE RECORDER		
WESTERN-PACIFIC	1,465	14,750	5,188	25,762	8,318	4,619	691	5,041	
	15.7	5.0	8.7	3.6	6.8	8.8	20.4	8.3	
	3.3	33.6	11.8	58.7	19.0	10.5	1.6	11.5	
TOTAL	6,562	89,986	28,858	138,440	44,719	24,100	2,741	37,808	
	7.3	1.6	3.4	1.0	2.6	3.6	8.9	2.4	
	2.6	35.1	11.2	53.9	17.4	9.4	1.1	14.7	

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

7.4 1989 GENERAL AVIATION AIRCRAFT WITH VHF COMMUNICATIONS EQUIPMENT  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 7

VHF COMMUNICATIONS

STATE	360 CH PORT	360 CH FXD	720 CH PORT	720 CH FXD	1+ SYS	HF RADIO	COCKPIT VOICE REC'DER	NO VHF
ALABAMA								
ESTIMATED POPULATION	89	1,201	438	2,267	679	513	23	300
% STANDARD ERROR	77.7	18.0	31.9	13.2	24.3	26.4	93.5	32.0
% WITH CAPABILITY	2.5	33.0	12.0	62.2	18.6	14.1	0.6	8.2
ALASKA								
ESTIMATED POPULATION	310	3,946	859	4,015	1,305	481	40	459
% STANDARD ERROR	28.9	8.7	19.0	8.8	15.9	21.6	101.7	24.9
% WITH CAPABILITY	3.7	47.4	10.3	48.2	15.7	5.8	0.5	5.5
ARIZONA								
ESTIMATED POPULATION	196	2,158	986	3,382	1,170	489	232	713
% STANDARD ERROR	42.5	13.5	20.6	10.8	18.7	29.3	39.5	22.0
% WITH CAPABILITY	3.2	35.0	16.0	54.8	18.9	7.9	3.8	11.5
ARKANSAS								
ESTIMATED POPULATION	25	1,135	171	1,372	460	250	10	741
% STANDARD ERROR	93.3	19.7	47.4	16.8	30.4	37.4	119.6	20.8
% WITH CAPABILITY	0.8	37.9	5.7	45.8	15.4	8.4	0.3	24.8
CALIFORNIA								
ESTIMATED POPULATION	1,098	11,293	3,884	20,559	6,384	3,782	404	4,148
% STANDARD ERROR	18.3	5.8	10.1	4.1	7.8	9.6	24.3	9.2
% WITH CAPABILITY	3.2	32.6	11.2	59.3	18.4	10.9	1.2	12.0
COLORADO								
ESTIMATED POPULATION	120	1,957	709	2,536	843	505	6	684
% STANDARD ERROR	49.6	14.3	23.3	12.6	21.5	29.7	167.1	22.4
% WITH CAPABILITY	2.3	37.7	13.7	48.9	16.2	9.7	0.1	13.2
CONNECTICUT								
ESTIMATED POPULATION	140	579	340	1,416	423	111	16	249
% STANDARD ERROR	52.0	26.6	35.8	16.6	31.1	54.3	79.8	39.0
% WITH CAPABILITY	6.1	25.3	14.9	62.0	18.5	4.9	0.7	10.9
DELAWARE								
ESTIMATED POPULATION	54	453	154	1,233	374	162	53	87
% STANDARD ERROR	82.3	28.6	44.3	17.6	31.2	46.1	65.7	56.6
% WITH CAPABILITY	3.4	28.7	9.8	78.1	23.7	10.2	3.3	5.5

7.4 1989 GENERAL AVIATION AIRCRAFT WITH VHF COMMUNICATIONS EQUIPMENT  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 7

STATE	VHF COMMUNICATIONS							
	360 CH PORT	360 CH FXD	720 CH PORT	720 CH FXD	1+ SYS	HF RADIO	COCKPIT VOICE RECDER	NO VHF
D.C.								
ESTIMATED POPULATION	1	15	3	28	6	10	5	0
% STANDARD ERROR	287.3	158.2	286.7	99.6	214.2	113.5	145.6	0.0
% WITH CAPABILITY	4.0	39.0	6.8	75.3	17.1	27.8	12.8	0.0
FLORIDA								
ESTIMATED POPULATION	743	5,566	2,000	8,875	3,077	1,531	144	1,271
% STANDARD ERROR	22.0	8.4	14.0	6.4	10.9	15.4	39.2	16.9
% WITH CAPABILITY	4.9	36.6	13.1	58.3	20.2	10.1	0.9	8.4
GEORGIA								
ESTIMATED POPULATION	180	2,200	359	3,227	867	343	150	1,031
% STANDARD ERROR	43.3	13.3	32.3	10.7	20.7	31.4	46.2	20.3
% WITH CAPABILITY	3.0	36.2	5.9	53.1	14.3	5.6	2.5	17.0
HAWAII								
ESTIMATED POPULATION	20	248	68	260	135	27	3	21
% STANDARD ERROR	128.9	40.9	72.9	39.8	59.3	118.2	249.4	136.7
% WITH CAPABILITY	4.2	51.7	14.1	54.2	28.2	5.7	0.6	4.3
IDAHO								
ESTIMATED POPULATION	52	1,044	161	1,175	376	181	6	248
% STANDARD ERROR	65.6	20.0	47.9	18.0	33.2	46.2	162.7	38.2
% WITH CAPABILITY	2.2	44.9	6.9	50.5	16.2	7.8	0.3	10.6
ILLINOIS								
ESTIMATED POPULATION	93	2,702	1,046	5,063	1,590	575	141	976
% STANDARD ERROR	56.5	12.1	20.9	9.0	16.1	24.1	44.7	17.5
% WITH CAPABILITY	1.1	32.9	12.7	61.6	19.4	7.0	1.7	11.9
INDIANA								
ESTIMATED POPULATION	153	1,429	513	2,555	941	453	28	896
% STANDARD ERROR	53.2	17.3	26.7	12.3	20.4	27.8	54.1	20.8
% WITH CAPABILITY	3.3	31.1	11.2	55.6	20.5	9.9	0.6	19.5
IOWA								
ESTIMATED POPULATION	58	1,025	299	1,316	417	187	11	707
% STANDARD ERROR	66.5	20.6	34.3	17.0	32.4	42.8	132.9	23.4
% WITH CAPABILITY	2.0	34.7	10.1	44.5	14.1	6.3	0.4	23.9

7.4 1989 GENERAL AVIATION AIRCRAFT WITH VHF COMMUNICATIONS EQUIPMENT  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

STATE	VHF COMMUNICATIONS										NO VHF
	360 CH PORT	360 CH FXD	720 CH PORT	720 CH FXD	1+ SYS	HF RADIO	COCKPIT VOICE REC'DER				
KANSAS											
ESTIMATED POPULATION	54	1,278	349	1,989	572	356	5	5	959		
% STANDARD ERROR	79.0	17.8	31.4	13.7	25.8	32.9	147.2	20.6			
% WITH CAPABILITY	1.3	31.4	8.6	48.9	14.1	8.7	0.1	23.6			
KENTUCKY											
ESTIMATED POPULATION	85	540	232	1,075	226	141	10	10	191		
% STANDARD ERROR	61.8	28.1	39.7	19.5	39.1	48.2	101.9	39.2			
% WITH CAPABILITY	4.5	28.9	12.4	57.5	12.1	7.6	0.5	10.2			
LOUISIANA											
ESTIMATED POPULATION	94	863	199	1,670	368	148	38	38	724		
% STANDARD ERROR	74.2	21.5	40.3	15.4	31.6	53.8	110.0	22.3			
% WITH CAPABILITY	2.9	27.0	6.2	52.3	11.5	4.6	1.2	22.7			
MAINE											
ESTIMATED POPULATION	15	546	240	865	206	41	0	0	247		
% STANDARD ERROR	129.6	25.5	39.4	20.9	41.4	97.2	0.0	37.6			
% WITH CAPABILITY	0.9	32.0	14.1	50.7	12.1	2.4	0.0	14.5			
MARYLAND											
ESTIMATED POPULATION	52	1,303	553	1,878	801	299	43	43	224		
% STANDARD ERROR	84.8	17.5	28.3	14.8	22.8	36.0	92.8	31.2			
% WITH CAPABILITY	1.6	40.8	17.3	58.8	25.0	9.3	1.3	7.0			
MASSACHUSETTS											
ESTIMATED POPULATION	92	978	645	2,475	1,033	188	19	19	328		
% STANDARD ERROR	66.9	20.5	24.6	12.7	20.4	39.5	96.4	32.0			
% WITH CAPABILITY	2.6	28.1	18.5	71.1	29.7	5.4	0.6	9.4			
MICHIGAN											
ESTIMATED POPULATION	93	3,056	1,556	5,044	1,801	1,001	133	133	1,230		
% STANDARD ERROR	48.5	11.4	16.0	8.7	15.0	18.6	25.4	17.2			
% WITH CAPABILITY	1.0	33.3	17.0	55.0	19.6	10.9	1.5	13.4			
MINNESOTA											
ESTIMATED POPULATION	167	2,264	355	2,169	513	727	16	16	1,237		
% STANDARD ERROR	46.9	13.3	32.3	13.1	26.6	22.6	78.1	16.9			
% WITH CAPABILITY	2.9	38.9	6.1	37.2	8.8	12.5	0.3	21.2			



7.4 1989 GENERAL AVIATION AIRCRAFT WITH VHF COMMUNICATIONS EQUIPMENT  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

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STATE	VHF COMMUNICATIONS								NO VHF
	360 CH PORT	360 CH FXD	720 CH PORT	720 CH FXD	1+ SYS	HF RADIO	COCKPIT VOICE REC'DER		
MISSISSIPPI									
ESTIMATED POPULATION	21	637	136	1,163	300	297	1	477	
‡ STANDARD ERROR	108.6	26.4	50.9	18.1	35.7	38.1	279.8	27.0	
‡ WITH CAPABILITY	1.0	29.8	6.3	54.4	14.0	13.9	0.1	22.3	
MISSOURI									
ESTIMATED POPULATION	96	2,000	451	1,863	406	707	30	751	
‡ STANDARD ERROR	56.9	14.8	29.6	14.4	31.5	24.5	52.4	20.5	
‡ WITH CAPABILITY	1.9	40.5	9.1	37.7	8.2	14.3	0.6	15.2	
MONTANA									
ESTIMATED POPULATION	84	913	166	913	357	204	20	586	
‡ STANDARD ERROR	60.4	21.0	48.7	20.6	35.4	41.1	84.8	24.6	
‡ WITH CAPABILITY	3.7	40.2	7.3	40.1	15.7	9.0	0.9	25.8	
NEBRASKA									
ESTIMATED POPULATION	17	568	92	783	168	136	9	661	
‡ STANDARD ERROR	170.6	26.3	57.4	21.4	49.5	45.0	102.7	25.4	
‡ WITH CAPABILITY	0.8	28.9	4.7	39.8	8.6	6.9	0.4	33.6	
NEVADA									
ESTIMATED POPULATION	151	1,050	251	1,561	629	321	52	159	
‡ STANDARD ERROR	48.6	20.2	38.5	15.9	26.9	35.3	81.0	50.6	
‡ WITH CAPABILITY	5.9	41.1	9.8	61.1	24.6	12.6	2.0	6.2	
NEW HAMPSHIRE									
ESTIMATED POPULATION	38	625	129	974	273	220	41	206	
‡ STANDARD ERROR	107.1	25.9	52.3	19.7	38.8	44.0	108.4	40.4	
‡ WITH CAPABILITY	2.3	38.5	7.9	60.0	16.8	13.5	2.5	12.7	
NEW JERSEY									
ESTIMATED POPULATION	83	1,438	512	2,751	886	377	84	538	
‡ STANDARD ERROR	59.9	17.1	27.4	11.9	21.2	29.9	37.5	24.3	
‡ WITH CAPABILITY	1.9	33.3	11.8	63.6	20.5	8.7	2.0	12.5	
NEW MEXICO									
ESTIMATED POPULATION	79	1,154	297	1,273	537	336	1	377	
‡ STANDARD ERROR	78.7	19.0	35.9	17.2	28.5	35.9	432.9	26.4	
‡ WITH CAPABILITY	3.0	43.4	11.2	47.9	20.2	12.6	0.0	14.2	

7.4 1989 GENERAL AVIATION AIRCRAFT WITH VHF COMMUNICATIONS EQUIPMENT  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

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STATE	VHF COMMUNICATIONS									
	360 CH PORT	360 CH FXD	720 CH PORT	720 CH FXD	1+ SYS	HF RADIO	COCKPIT VOICE REC'DER	NO VHF		
NEW YORK	ESTIMATED POPULATION	2,419	1,088	4,334	1,829	809	126	1,470		
	% STANDARD ERROR	12.7	19.8	9.5	15.3	20.0	33.1	15.1		
	% WITH CAPABILITY	31.9	14.3	57.1	24.1	10.7	1.7	19.4		
NORTH CAROLINA	ESTIMATED POPULATION	2,138	484	2,902	757	275	12	656		
	% STANDARD ERROR	14.0	27.7	10.8	21.8	34.0	81.7	22.4		
	% WITH CAPABILITY	38.2	8.6	51.8	13.5	4.9	0.2	11.7		
NORTH DAKOTA	ESTIMATED POPULATION	11	61	668	94	55	1	569		
	% STANDARD ERROR	142.5	75.7	25.5	63.4	89.5	423.8	24.2		
	% WITH CAPABILITY	0.6	33.7	36.4	5.1	3.0	0.1	31.0		
OHIO	ESTIMATED POPULATION	305	1,209	5,117	2,049	948	224	1,496		
	% STANDARD ERROR	36.4	11.2	8.6	14.1	19.4	29.7	16.0		
	% WITH CAPABILITY	3.3	35.2	55.9	22.4	10.4	2.5	16.4		
OKLAHOMA	ESTIMATED POPULATION	125	394	2,332	575	494	17	682		
	% STANDARD ERROR	57.1	33.0	12.8	26.6	29.1	83.4	23.2		
	% WITH CAPABILITY	2.8	34.1	52.0	12.8	11.0	0.4	15.2		
OREGON	ESTIMATED POPULATION	100	815	2,800	910	636	22	661		
	% STANDARD ERROR	47.4	22.1	11.8	21.4	22.9	96.1	23.0		
	% WITH CAPABILITY	1.9	35.3	52.7	17.1	12.0	0.4	12.4		
PENNSYLVANIA	ESTIMATED POPULATION	97	774	3,840	1,381	827	199	1,069		
	% STANDARD ERROR	45.3	21.9	10.0	17.2	20.2	45.9	18.7		
	% WITH CAPABILITY	1.4	11.4	56.5	20.3	12.2	2.9	15.7		
RHODE ISLAND	ESTIMATED POPULATION	4	76	289	70	88	0	38		
	% STANDARD ERROR	283.3	74.9	38.6	76.9	72.3	0.0	94.3		
	% WITH CAPABILITY	0.9	15.4	58.1	14.0	17.7	0.0	7.7		

7.4 1989 GENERAL AVIATION AIRCRAFT WITH VHF COMMUNICATIONS EQUIPMENT  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

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STATE	VHF COMMUNICATIONS										NO VHF
	360 CH PORT	360 CH FXD	720 CH PORT	720 CH FXD	1+ SYS	HF RADIO	COCKPIT VOICE RECORDER				
SOUTH CAROLINA	34	611	283	1,230	265	199	3	314			
	96.8	25.8	36.9	17.5	38.8	44.5	251.0	36.2			
	1.5	27.4	12.7	55.2	11.9	8.9	0.1	14.1			
SOUTH DAKOTA	30	680	115	428	96	142	0	300			
	105.1	25.5	58.8	30.2	66.7	54.4	0.0	29.4			
	2.0	45.6	7.7	28.7	6.4	9.6	0.0	20.1			
TENNESSEE	38	1,469	380	2,279	773	353	37	258			
	82.4	16.6	31.7	12.7	22.4	30.3	66.3	34.3			
	1.0	40.4	10.5	62.6	21.3	9.7	1.0	7.1			
TEXAS	352	7,234	2,174	11,180	3,616	2,334	154	2,862			
	34.3	7.4	13.1	5.7	10.2	12.5	35.2	11.0			
	1.7	35.9	10.8	55.4	17.9	11.6	0.8	14.2			
UTAH	22	628	188	889	271	109	11	93			
	141.3	26.7	48.4	21.1	39.0	55.6	147.6	61.6			
	1.4	40.5	12.1	57.3	17.5	7.0	0.7	6.0			
VERMONT	15	301	39	306	82	32	0	53			
	166.6	35.5	101.7	33.1	65.1	120.3	0.0	72.9			
	2.3	48.4	6.2	49.3	13.2	5.1	0.0	8.6			
VIRGINIA	19	1,271	629	2,121	988	363	39	743			
	96.9	17.8	26.3	13.2	20.3	28.5	48.5	22.2			
	0.5	33.7	16.6	56.1	26.2	9.6	1.0	19.7			
WASHINGTON	235	3,027	901	3,479	1,063	329	12	1,151			
	43.1	11.3	20.1	10.5	19.1	34.5	60.6	17.6			
	3.0	39.0	11.6	44.9	13.7	4.2	0.1	14.8			

7.4 1989 GENERAL AVIATION AIRCRAFT WITH VHF COMMUNICATIONS EQUIPMENT  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 7 OF 7

STATE	VHF COMMUNICATIONS										NO VHF
	360 CH PORT	360 CH FXD	720 CH PORT	720 CH FXD	1+ SYS	HF RADIO	COCKPIT VOICE REC'D				
WEST VIRGINIA											
ESTIMATED POPULATION	114	316	147	532	169	116	0	137			
% STANDARD ERROR	68.7	36.3	54.4	27.7	50.3	61.0	0.0	54.2			
% WITH CAPABILITY	10.6	29.5	13.7	49.6	15.8	10.8	0.0	12.7			
WISCONSIN											
ESTIMATED POPULATION	73	1,645	627	2,668	816	487	55	1,045			
% STANDARD ERROR	73.7	15.8	25.4	12.3	22.9	28.6	68.8	19.1			
% WITH CAPABILITY	1.4	30.9	11.8	50.2	15.3	9.2	1.0	19.7			
WYOMING											
ESTIMATED POPULATION	27	385	22	534	136	60	0	122			
% STANDARD ERROR	127.0	31.1	110.5	26.3	55.6	79.4	0.0	50.6			
% WITH CAPABILITY	2.8	40.1	2.3	55.7	14.2	6.2	0.0	12.7			
PUERTO RICO											
ESTIMATED POPULATION	2	230	7	157	73	20	0	22			
% STANDARD ERROR	342.7	41.6	200.8	49.6	79.5	168.5	0.0	151.8			
% WITH CAPABILITY	0.6	66.4	2.1	45.4	21.0	5.8	0.0	6.5			
OTHER U.S. TERRITORIES											
ESTIMATED POPULATION	4	28	8	54	17	23	0	8			
% STANDARD ERROR	256.6	122.9	205.5	74.3	141.1	123.5	0.0	177.0			
% WITH CAPABILITY	4.9	30.2	9.2	59.0	18.8	24.6	0.0	9.0			
TOTAL											
ESTIMATED POPULATION	6,562	89,986	28,858	138,440	44,719	24,100	2,741	37,808			
% STANDARD ERROR	7.3	1.6	3.4	1.0	2.6	3.6	8.9	2.4			
% WITH CAPABILITY	2.6	35.1	11.2	53.9	17.4	9.4	1.1	14.7			

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

7.5 1989 GENERAL AVIATION AIRCRAFT WITH PRECISION APPROACH AND TRANSPONDER EQUIPMENT  
BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 3

AIRCRAFT TYPE	PRECISION			APPROACH EQUIPMENT			TRANSPONDER EQUIPMENT			
	LOCALIZER	MARKER BEACON	GLIDE SLOPE	MLS	NO PREC EQUIP		TRANSPOND	ALTIT ENCODE	MOD S COLLISION CAP	NO TRANS AVIOD EQ EQUIP
FIXED WING										
FIXED WING - PISTON										
1 ENG: 1-3 SEATS										
ESTIMATED POPULATION	14,269	9,043	7,975	179	71,637		35,749	23,192	1,006	414
% STANDARD ERROR	4.9	6.4	7.0	41.8	1.0		2.2	3.5	19.6	33.3
% WITH CAPABILITY	16.2	10.3	9.1	0.2	81.6		40.7	26.4	1.1	0.5
1 ENG: 4+ SEATS										
ESTIMATED POPULATION	85,268	85,989	77,809	236	26,963		108,659	88,325	8,492	629
% STANDARD ERROR	1.1	1.0	1.2	41.9	3.0		0.5	1.0	6.7	25.7
% WITH CAPABILITY	70.9	71.5	64.7	0.2	22.4		90.4	73.5	7.1	0.5
1 ENGINE: TOTAL										
ESTIMATED POPULATION	99,537	95,031	85,784	416	98,600		144,407	111,517	9,498	1,043
% STANDARD ERROR	1.1	1.1	1.3	29.9	1.1		0.7	1.1	6.4	20.4
% WITH CAPABILITY	47.8	45.7	41.2	0.2	47.4		69.4	53.6	4.6	0.5
2 ENG: 1-6 SEATS										
ESTIMATED POPULATION	16,738	16,694	15,219	119	878		17,100	15,588	1,501	53
% STANDARD ERROR	1.1	1.1	1.8	55.8	18.4		0.9	1.7	15.0	74.6
% WITH CAPABILITY	93.8	93.6	85.3	0.7	4.9		95.9	87.4	8.4	0.3
2 ENG: 7+ SEATS										
ESTIMATED POPULATION	8,053	7,934	7,542	34	605		8,218	7,747	818	231
% STANDARD ERROR	1.2	1.3	2.0	50.4	15.7		1.1	1.6	19.2	34.8
% WITH CAPABILITY	92.7	91.3	86.8	0.4	7.0		94.6	89.1	9.4	2.7
2 ENGINE: TOTAL										
ESTIMATED POPULATION	24,791	24,628	22,761	154	1,483		25,319	23,334	2,319	285
% STANDARD ERROR	0.8	0.9	1.4	44.8	12.7		0.7	1.2	11.8	31.5
% WITH CAPABILITY	93.5	92.8	85.8	0.6	5.6		95.4	88.0	8.7	1.1
PISTON:										
OTHER										
ESTIMATED POPULATION	173	155	155	0	21		192	110	0	0
% STANDARD ERROR	4.3	5.3	5.3	0.0	34.3		1.4	37.0	0.0	0.0
% WITH CAPABILITY	88.9	80.0	80.0	0.0	11.1		98.9	56.5	0.0	0.0
PISTON: TOTAL										
ESTIMATED POPULATION	124,501	119,815	108,700	569	100,104		169,918	134,961	11,817	1,328
% STANDARD ERROR	0.9	0.9	1.1	24.9	1.1		0.6	0.9	5.6	17.4
% WITH CAPABILITY	53.0	51.0	46.3	0.2	42.6		72.4	57.5	5.0	0.6

7.5 1989 GENERAL AVIATION AIRCRAFT WITH PRECISION APPROACH AND TRANSPONDER EQUIPMENT  
BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 3

AIRCRAFT TYPE	PRECISION APPROACH EQUIPMENT				TRANSPONDER EQUIPMENT			
	LOCALIZER	MARKER BEACON	GLIDE SLOPE	MLS NO PREC EQUIP	TRNSPOND	ALTTT ENCODE	MOD S CAP AVIOD EQ	NO TRANS EQUIP
FIXED WING - TURBOPROP								
2 ENG: 1-12 SEATS								
ESTIMATED POPULATION	4,939	4,937	4,528	66	4,947	4,819	554	33
% STANDARD ERROR	1.3	1.3	2.4	63.7	1.3	1.7	19.6	33
% WITH CAPABILITY	97.2	97.1	89.1	1.3	97.3	94.8	10.9	0.6
2 ENG: 13+ SEATS								
ESTIMATED POPULATION	1,351	1,357	1,300	10	1,370	1,282	246	6
% STANDARD ERROR	2.5	2.1	2.6	104.7	1.3	5.4	34.2	127.2
% WITH CAPABILITY	93.7	94.1	90.2	0.7	95.0	88.9	17.1	0.4
2 ENGINE: TOTAL								
ESTIMATED POPULATION	6,290	6,294	5,828	76	6,317	6,101	800	39
% STANDARD ERROR	1.2	1.1	2.0	56.8	1.0	1.8	17.2	81.7
% WITH CAPABILITY	96.4	96.5	89.3	1.2	96.8	93.5	12.3	0.6
TURBOPROP: OTHER								
ESTIMATED POPULATION	120	124	124	0	132	125	30	0
% STANDARD ERROR	27.6	26.8	26.8	0.0	26.1	26.8	82.9	0.0
% WITH CAPABILITY	36.9	38.0	38.0	0.0	40.5	38.2	9.3	0.0
TURBOPROP: TOTAL								
ESTIMATED POPULATION	6,410	6,418	5,952	76	6,450	6,225	830	39
% STANDARD ERROR	1.2	1.2	2.0	56.8	1.1	1.8	16.8	81.7
% WITH CAPABILITY	93.6	93.7	86.9	1.1	94.2	90.9	12.1	0.6
FIXED WING - TURBOJET								
2 ENGINE TURBOJET								
ESTIMATED POPULATION	4,112	4,114	3,843	86	4,149	4,085	566	65
% STANDARD ERROR	1.0	1.0	1.8	37.1	0.9	1.1	14.4	37.2
% WITH CAPABILITY	97.7	97.7	91.3	2.0	96.6	97.1	13.5	1.5
TURBOJET: OTHER								
ESTIMATED POPULATION	430	404	415	15	437	411	72	17
% STANDARD ERROR	6.9	8.1	7.6	66.3	6.8	7.6	30.3	61.8
% WITH CAPABILITY	81.6	76.6	78.8	2.8	82.9	78.0	13.7	3.3
TURBOJET: TOTAL								
ESTIMATED POPULATION	4,541	4,518	4,258	101	4,586	4,496	639	82
% STANDARD ERROR	1.1	1.1	1.8	33.1	1.0	1.2	13.3	32.1
% WITH CAPABILITY	95.9	95.4	89.9	2.1	96.8	94.9	13.5	1.7

7.5 1989 GENERAL AVIATION AIRCRAFT WITH PRECISION APPROACH AND TRANSPONDER EQUIPMENT  
BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

PAGE 3 OF 3

AIRCRAFT TYPE	PRECISION APPROACH EQUIPMENT				TRANSPONDER EQUIPMENT			
	LOCALIZER	MARKER BEACON	GLIDE SLOPE	MLS NO PREC EQUIP	TRANSPOND	ALTIT ENCODE	MOD S CAP AVIOD EQ	NO TRANS EQUIP
FIXED WING: TOTAL								
ESTIMATED POPULATION	135,453	130,750	118,910	746 100,695	180,953	145,683	13,286	65,437
± STANDARD ERROR	0.9	0.8	1.0	20.4 1.1	0.5	0.9	5.1	1.5
± WITH CAPABILITY	55.0	53.1	48.3	0.3 40.9	73.4	59.1	5.4	26.6
ROTORCRAFT								
PISTON								
ESTIMATED POPULATION	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
± STANDARD ERROR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
± WITH CAPABILITY	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TURBINE								
ESTIMATED POPULATION	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
± STANDARD ERROR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
± WITH CAPABILITY	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ROTORCRAFT: TOTAL								
ESTIMATED POPULATION	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
± STANDARD ERROR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
± WITH CAPABILITY	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OTHER								
ESTIMATED POPULATION	69	45	45	16 10,220	515	206	13	9,791
± STANDARD ERROR	54.8	77.3	77.8	129.2 0.4	22.1	30.3	40.7	1.2
± WITH CAPABILITY	0.7	0.4	0.4	0.2 99.2	5.0	2.0	0.1	95.0
TOTAL								
ESTIMATED POPULATION	135,522	130,795	118,955	762 110,915	181,468	145,889	13,299	75,228
± STANDARD ERROR	0.9	0.8	1.0	20.1 1.0	0.5	0.9	5.1	1.3
± WITH CAPABILITY	52.6	51.0	46.3	0.3 43.2	70.7	56.8	5.2	29.3

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

7.6 1989 GENERAL AVIATION AIRCRAFT WITH PRECISION APPROACH AND TRANSPONDER EQUIPMENT  
BY PRIMARY USE  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 2

PRIMARY USE	PRECISION APPROACH EQUIPMENT				TRANSPONDER EQUIPMENT			
	LOCALIZER	MARKER BEACON	GLIDE SLOPE	MLS NO PREC EQUIP	TRANSPOND	ALTIT ENCODE	MOD S COLLISIC <sup>N</sup> CAP AVIOD EQ	NO TRANS EQUIP
<b>CORPORATE</b>								
ESTIMATED POPULATION	11,245	11,275	10,421	190	291			
% STANDARD ERROR	3.9	3.9	4.1	34.8	31.6			
% WITH CAPABILITY	97.0	97.2	89.9	1.6	2.5			
<b>BUSINESS</b>								
ESTIMATED POPULATION	30,956	31,264	28,637	43	4,358			
% STANDARD ERROR	3.0	3.0	3.1	67.2	8.9			
% WITH CAPABILITY	83.6	84.5	77.4	0.1	11.8			
<b>PERSONAL</b>								
ESTIMATED POPULATION	62,387	60,629	54,649	306	54,818			
% STANDARD ERROR	2.0	2.0	2.2	36.2	1.8			
% WITH CAPABILITY	50.4	49.0	44.2	0.2	44.3			
<b>INSTRUCTIONAL</b>								
ESTIMATED POPULATION	10,256	8,415	7,747	3	6,318			
% STANDARD ERROR	6.2	6.9	7.2	189.3	7.9			
% WITH CAPABILITY	60.1	49.3	45.4	0.0	37.0			
<b>AERIAL APPLICATION</b>								
ESTIMATED POPULATION	516	366	370	20	5,723			
% STANDARD ERROR	26.2	32.0	31.6	101.2	3.3			
% WITH CAPABILITY	8.2	5.8	5.9	0.3	91.4			
<b>AERIAL OBSERVATION</b>								
ESTIMATED POPULATION	2,490	2,296	2,069	8	1,924			
% STANDARD ERROR	12.5	13.0	13.8	190.5	12.8			
% WITH CAPABILITY	55.2	50.9	45.9	0.2	42.7			
<b>OTHER WORK USE</b>								
ESTIMATED POPULATION	440	349	369	2	1,381			
% STANDARD ERROR	27.8	32.4	31.0	235.8	14.6			
% WITH CAPABILITY	24.2	19.1	20.2	0.1	75.7			
<b>COMMUTER AIR CARRIER</b>								
ESTIMATED POPULATION	1,253	1,243	1,198	0	175			
% STANDARD ERROR	12.0	12.1	12.3	0.0	41.1			
% WITH CAPABILITY	87.1	86.4	83.2	0.0	12.2			



7.6 1989 GENERAL AVIATION AIRCRAFT WITH PRECISION APPROACH AND TRANSPONDER EQUIPMENT  
BY PRIMARY USE  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 2

PRIMARY USE	PRECISION APPROACH EQUIPMENT				TRANSPONDER EQUIPMENT			
	LOCALIZER MARKER BEACON	GLIDE SLOPE	MLS	NO PREC EQUIP	TRNSPOND	ALTTT ENCODE	MOD S CAP AVICD EQ	NO TRANS EQUIP
AIR TAXI								
ESTIMATED POPULATION	4,960	4,903	4,700	59	5,236	4,733	349	38
% STANDARD ERROR	7.3	7.3	7.6	86.7	7.1	7.5	28.6	86.2
% WITH CAPABILITY	90.4	89.3	85.6	1.1	95.4	86.2	6.4	0.7
OTHER								
ESTIMATED POPULATION	2,000	1,804	1,741	17	2,618	2,019	182	21
% STANDARD ERROR	11.9	12.6	12.7	94.9	10.8	11.8	37.7	69.7
% WITH CAPABILITY	60.2	54.3	52.4	0.5	78.9	60.8	5.5	0.6
INACTIVE								
ESTIMATED POPULATION	8,538	7,894	6,626	126	13,225	6,958	1,179	55
% STANDARD ERROR	5.3	5.4	6.2	43.5	4.1	6.6	16.3	81.6
% WITH CAPABILITY	19.3	17.8	15.0	0.3	29.9	15.7	2.7	0.1
TOTAL								
ESTIMATED POPULATION	135,522	130,795	118,955	762	181,468	145,889	13,299	1,451
% STANDARD ERROR	9.9	0.8	1.0	20.1	0.5	0.9	5.1	16.2
% WITH CAPABILITY	52.8	51.0	46.3	0.3	70.7	56.8	5.2	0.6

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

7.7 1989 GENERAL AVIATION AIRCRAFT WITH PRECISION APPROACH AND TRANSPONDER EQUIPMENT  
BY REGION OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 2

REGION	PRECISION			APPROACH		EQUIPMENT		TRANSPONDER EQUIPMENT				
	LOCALIZER	MARKER BEACON	GLIDE SLOPE	MLS	NO PREC EQUIP	TRNSPOND	ALTIT ENCODE	MOD S CAP	COLLISION AVIOD EQ	NO TRANS EQUIP		
ALASKAN												
ESTIMATED POPULATION	1,994	1,603	1,581	1	5,938	3,492	1,390	30	81	4,838		
% STANDARD ERROR	12.3	14.4	13.9	287.3	6.9	9.4	14.8	95.1	50.7	7.6		
% WITH CAPABILITY	23.9	19.2	19.0	0.0	71.3	41.9	16.7	0.4	1.0	58.1		
CENTRAL												
ESTIMATED POPULATION	6,591	6,183	5,551	26	6,822	8,961	6,580	661	99	4,975		
% STANDARD ERROR	7.6	7.7	8.1	89.0	7.4	6.5	7.5	23.6	65.9	8.6		
% WITH CAPABILITY	47.3	44.4	39.8	0.2	48.9	64.3	47.2	4.7	0.7	35.7		
EASTERN												
ESTIMATED POPULATION	16,672	15,830	14,390	110	10,901	20,896	17,838	1,336	219	7,473		
% STANDARD ERROR	4.6	4.7	4.9	40.8	5.7	4.1	4.5	16.9	41.3	6.7		
% WITH CAPABILITY	58.8	55.8	50.7	0.4	38.4	73.7	62.9	4.7	0.8	26.3		
GREAT LAKES												
ESTIMATED POPULATION	22,633	22,263	19,870	131	21,344	31,017	24,863	2,219	164	14,577		
% STANDARD ERROR	3.9	3.9	4.1	51.9	4.0	3.3	3.7	13.1	49.9	4.7		
% WITH CAPABILITY	49.6	48.8	43.6	0.3	46.8	68.0	54.5	4.9	0.4	32.0		
NEW ENGLAND												
ESTIMATED POPULATION	5,823	5,464	4,896	99	4,045	7,836	6,439	650	36	2,378		
% STANDARD ERROR	8.0	8.3	8.8	65.7	9.5	7.0	7.7	24.9	100.4	11.8		
% WITH CAPABILITY	57.0	53.5	47.9	1.0	39.6	76.7	63.0	6.4	0.4	23.3		
NORTHWEST MOUNTAIN												
ESTIMATED POPULATION	11,510	11,336	10,178	73	12,789	16,978	13,532	1,289	155	8,391		
% STANDARD ERROR	5.6	5.6	6.0	65.4	5.2	4.6	5.2	17.6	52.1	6.3		
% WITH CAPABILITY	45.4	44.7	40.1	0.3	50.4	66.9	53.3	5.1	0.6	33.1		
SOUTHERN												
ESTIMATED POPULATION	24,694	23,244	21,380	95	14,605	31,896	25,154	2,024	172	8,954		
% STANDARD ERROR	3.6	3.7	3.9	59.6	5.0	3.2	3.6	13.2	34.1	6.2		
% WITH CAPABILITY	60.4	56.9	52.3	0.2	35.8	78.1	61.6	5.0	0.4	21.9		
SOUTHWESTERN												
ESTIMATED POPULATION	18,476	17,377	16,459	92	13,977	24,134	18,831	1,940	128	9,357		
% STANDARD ERROR	4.3	4.4	4.6	66.1	5.1	3.8	4.3	14.3	56.8	5.9		
% WITH CAPABILITY	55.2	51.9	49.1	0.3	41.7	72.1	56.2	5.8	0.4	27.9		



7.8 1989 GENERAL AVIATION AIRCRAFT WITH PRECISION APPROACH AND TRANSPONDER EQUIPMENT  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 7

STATE	PRECISION EQUIPMENT				TRANSPONDER EQUIPMENT			
	LOCALIZER	MARKER BEACON	GLIDE SLOPE	MLS NO PREC EQUIP	TRANSPOND	ALTTIT ENCODE	MOD S CAP AVIOD EQ	NO TRANS EQUIP
ALABAMA								
ESTIMATED POPULATION	2,236	2,058	1,794	2	2,927	2,124	137	72
% STANDARD ERROR	13.0	13.4	14.2	327.0	11.6	13.3	48.3	59.4
% WITH CAPABILITY	61.3	56.5	49.2	0.0	80.3	58.3	3.8	2.0
ALASKA								
ESTIMATED POPULATION	1,994	1,603	1,581	1	3,492	1,390	30	81
% STANDARD ERROR	12.3	14.4	13.9	287.3	9.4	14.8	95.1	50.7
% WITH CAPABILITY	23.9	19.2	19.0	0.0	41.9	16.7	0.4	1.0
ARIZONA								
ESTIMATED POPULATION	2,994	3,304	2,888	20	4,782	3,967	387	33
% STANDARD ERROR	11.2	10.8	11.5	41.0	9.1	10.0	30.3	119.5
% WITH CAPABILITY	48.5	53.5	46.8	0.3	77.5	64.3	6.3	0.5
ARKANSAS								
ESTIMATED POPULATION	1,388	1,275	1,245	3	1,946	1,418	161	28
% STANDARD ERROR	16.2	16.8	17.1	230.7	14.2	16.2	51.2	129.5
% WITH CAPABILITY	46.4	42.6	41.6	0.1	65.0	47.4	5.4	0.9
CALIFORNIA								
ESTIMATED POPULATION	20,350	20,389	18,172	75	26,099	22,862	2,493	305
% STANDARD ERROR	4.1	4.1	4.4	60.4	3.6	3.9	12.0	39.6
% WITH CAPABILITY	58.7	58.8	52.4	0.2	75.3	66.0	7.2	0.9
COLORADO								
ESTIMATED POPULATION	2,391	2,384	2,260	44	3,536	3,066	154	41
% STANDARD ERROR	12.9	12.8	13.1	83.0	10.8	11.6	44.9	105.0
% WITH CAPABILITY	46.1	45.9	43.6	0.9	68.1	59.1	3.0	0.8
CONNECTICUT								
ESTIMATED POPULATION	1,364	1,278	1,065	0	1,765	1,557	179	18
% STANDARD ERROR	17.0	17.5	19.2	0.0	15.1	16.1	49.8	149.6
% WITH CAPABILITY	59.7	55.9	46.6	0.0	77.2	68.1	7.8	0.8
DELAWARE								
ESTIMATED POPULATION	1,214	1,129	1,036	18	1,448	1,301	50	11
% STANDARD ERROR	17.1	17.7	18.4	77.3	16.1	16.5	80.6	59.0
% WITH CAPABILITY	77.0	71.6	65.7	1.1	91.8	82.5	3.2	0.7

7.8 1989 GENERAL AVIATION AIRCRAFT WITH PRECISION APPROACH AND TRANSPONDER EQUIPMENT  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

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STATE	PRECISION				APPROACH			EQUIPMENT			TRANSPONDER EQUIPMENT			
	LOCALIZER	MARKER	BEACON	GLIDE SLOPE	MLS	NO PREC EQUIP	TRNSPOND	ALTIM ENCODE	MOD S CAP	COLLISION AVIOD EQ	NO TRANS EQUIP			
D.C.														
ESTIMATED POPULATION	33	33	33	33	3	5	34	31	4	0	3			
% STANDARD ERROR	90.9	90.9	90.9	90.9	294.7	351.8	91.1	92.2	252.9	0.0	419.2			
% WITH CAPABILITY	87.0	87.0	87.0	87.0	7.4	13.0	90.7	83.2	11.2	0.0	9.3			
FLORIDA														
ESTIMATED POPULATION	9,584	9,044	8,489	8,489	11	5,193	12,141	10,179	855	71	3,070			
% STANDARD ERROR	6.2	6.3	6.5	6.5	103.6	8.6	5.5	6.0	20.9	44.4	11.3			
% WITH CAPABILITY	63.0	59.5	55.8	55.8	0.1	34.1	79.8	66.9	5.6	0.5	20.2			
GEORGIA														
ESTIMATED POPULATION	3,303	3,162	2,958	2,958	0	2,594	4,545	3,537	407	26	1,537			
% STANDARD ERROR	10.6	10.9	11.2	11.2	0.0	12.5	9.2	10.3	29.6	89.1	15.8			
% WITH CAPABILITY	54.3	52.0	48.6	48.6	0.0	42.7	74.7	58.2	6.7	0.4	25.3			
HAWAII														
ESTIMATED POPULATION	238	264	208	208	6	155	392	353	4	1	88			
% STANDARD ERROR	37.6	39.3	41.3	41.3	211.7	48.1	31.6	33.2	248.2	400.7	64.1			
% WITH CAPABILITY	49.6	54.9	43.3	43.3	1.2	32.2	81.6	73.5	0.9	0.3	18.4			
IDAHO														
ESTIMATED POPULATION	1,016	939	849	849	0	1,265	1,463	1,093	123	2	863			
% STANDARD ERROR	18.9	19.8	20.6	20.6	0.0	17.8	16.2	18.3	56.8	320.5	21.1			
% WITH CAPABILITY	43.7	40.4	36.5	36.5	0.0	54.4	62.9	47.0	5.3	0.1	37.1			
ILLINOIS														
ESTIMATED POPULATION	5,091	4,877	4,354	4,354	31	2,859	6,444	5,447	293	46	1,769			
% STANDARD ERROR	8.9	9.0	9.5	9.5	78.2	11.4	7.9	8.5	33.7	67.5	13.9			
% WITH CAPABILITY	62.0	59.4	53.0	53.0	0.4	34.8	78.5	66.3	3.6	0.6	21.5			
INDIANA														
ESTIMATED POPULATION	2,540	2,562	2,369	2,369	1	1,877	3,213	2,424	382	32	1,385			
% STANDARD ERROR	12.3	12.2	12.6	12.6	227.1	15.0	11.1	12.5	30.1	127.6	16.9			
% WITH CAPABILITY	55.2	55.7	51.5	51.5	0.0	40.8	69.9	52.7	8.3	0.7	30.1			
IOWA														
ESTIMATED POPULATION	1,259	1,178	1,234	1,234	1	1,578	1,877	1,344	199	55	1,079			
% STANDARD ERROR	17.1	17.6	17.4	17.4	159.3	15.9	14.4	17.0	40.2	86.7	19.0			
% WITH CAPABILITY	42.6	39.8	41.8	41.8	0.0	53.4	63.5	45.5	6.7	1.9	36.5			

7.8 1989 GENERAL AVIATION AIRCRAFT WITH PRECISION APPROACH AND TRANSPONDER EQUIPMENT  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

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STATE	PRECISION			APPROACH		EQUIPMENT		TRANSPONDER EQUIPMENT				
	LOCALIZER	MARKER BEACON	GLIDE SLOPE	MLS	NO PREC EQUIP	TRNSPOND	ALTTIT ENCODE	MOD S CAP	COLLISION AVIOD EQ	NO TRANS EQUIP		
KANSAS												
ESTIMATED POPULATION	2,129	2,046	1,749	3	1,782	2,665	2,042	256	4	1,405		
‡ STANDARD ERROR	13.5	13.8	14.8	110.0	14.6	12.1	13.6	39.4	268.6	16.4		
‡ WITH CAPABILITY	52.3	50.3	43.0	0.1	43.8	65.5	50.2	6.3	0.1	34.5		
KENTUCKY												
ESTIMATED POPULATION	1,003	891	846	0	818	1,415	1,040	98	0	452		
‡ STANDARD ERROR	19.9	20.7	21.3	0.0	22.2	17.2	20.1	63.8	0.0	27.2		
‡ WITH CAPABILITY	53.7	47.7	45.3	0.0	43.8	75.8	55.7	5.2	0.0	24.2		
LOUISIANA												
ESTIMATED POPULATION	1,611	1,450	1,290	44	1,499	2,145	1,516	170	0	1,045		
‡ STANDARD ERROR	15.4	16.4	17.3	89.2	16.2	13.7	15.9	45.4	0.0	18.8		
‡ WITH CAPABILITY	50.5	45.4	40.4	1.4	47.0	67.2	47.5	5.3	0.0	32.8		
MAINE												
ESTIMATED POPULATION	684	641	601	5	1,017	1,014	619	44	0	691		
‡ STANDARD ERROR	22.8	23.2	24.3	159.8	19.3	19.0	23.7	79.7	0.0	23.2		
‡ WITH CAPABILITY	40.1	37.6	35.3	0.3	59.6	59.5	36.3	2.6	0.0	40.5		
MARYLAND												
ESTIMATED POPULATION	2,040	2,000	1,683	8	1,051	2,598	2,272	144	2	599		
‡ STANDARD ERROR	13.9	14.2	15.4	197.4	19.4	12.5	13.4	49.0	178.0	24.6		
‡ WITH CAPABILITY	63.8	62.6	52.7	0.2	32.9	81.3	71.1	4.5	0.1	18.7		
MASSACHUSETTS												
ESTIMATED POPULATION	2,127	2,061	1,874	61	1,129	2,956	2,595	291	17	526		
‡ STANDARD ERROR	13.6	13.9	14.5	83.7	18.1	11.7	12.4	37.9	138.5	23.2		
‡ WITH CAPABILITY	61.1	59.2	53.8	1.8	32.4	84.9	74.5	8.4	0.5	15.1		
MICHIGAN												
ESTIMATED POPULATION	4,826	4,674	3,976	44	3,926	6,567	5,425	387	0	2,599		
‡ STANDARD ERROR	8.7	8.8	9.5	104.1	9.9	7.6	8.3	32.3	0.0	11.8		
‡ WITH CAPABILITY	52.6	51.0	43.4	0.5	42.8	71.6	59.2	4.2	0.0	28.4		
MINNESOTA												
ESTIMATED POPULATION	2,040	1,946	1,819	36	3,448	3,595	2,790	316	2	2,232		
‡ STANDARD ERROR	13.4	13.7	14.2	115.4	10.5	10.5	11.7	35.7	251.0	12.5		
‡ WITH CAPABILITY	35.0	33.4	31.2	0.6	59.2	61.7	47.9	5.4	0.0	38.3		

7.8 1989 GENERAL AVIATION AIRCRAFT WITH PRECISION APPROACH AND TRANSPONDER EQUIPMENT  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

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STATE	PRECISION APPROACH EQUIPMENT				TRANSPONDER EQUIPMENT			
	LOCALIZER	MARKER BEACON	GLIDE SLOPE	MLS NO PREC EQUIP	TRANSPOND	ALTIT ENCODE	MOD S COLLISION CAP AVIOD EQ	NO TRANS EQUIP
MISSISSIPPI								
ESTIMATED POPULATION	1,285	1,108	1,044	55	811	1,170	19	0
% STANDARD ERROR	17.4	18.4	19.0	92.8	22.0	18.1	121.2	0.0
% WITH CAPABILITY	60.1	51.8	48.8	2.6	37.9	54.7	0.9	0.0
MISSOURI								
ESTIMATED POPULATION	2,457	2,254	1,953	8	2,299	2,557	94	40
% STANDARD ERROR	12.7	13.1	13.9	116.5	13.1	12.3	63.2	108.5
% WITH CAPABILITY	49.7	45.6	39.5	0.2	46.5	51.7	1.9	0.8
MONTANA								
ESTIMATED POPULATION	682	757	577	13	1,388	722	53	2
% STANDARD ERROR	23.8	22.6	25.1	159.9	16.0	22.6	74.4	242.4
% WITH CAPABILITY	30.0	33.3	25.4	0.6	61.0	31.8	2.3	0.1
NEBRASKA								
ESTIMATED POPULATION	746	706	615	14	1,163	637	112	0
% STANDARD ERROR	22.4	23.0	24.4	153.3	18.3	23.7	58.6	0.0
% WITH CAPABILITY	38.0	35.9	31.3	0.7	59.2	32.4	5.7	0.0
NEVADA								
ESTIMATED POPULATION	1,272	1,365	1,396	1	1,042	1,737	45	6
% STANDARD ERROR	17.9	17.3	17.2	198.1	18.7	15.4	69.5	123.9
% WITH CAPABILITY	49.8	53.5	54.7	0.1	40.8	68.1	1.8	0.2
NEW HAMPSHIRE								
ESTIMATED POPULATION	953	881	830	30	640	1,014	76	0
% STANDARD ERROR	20.0	21.0	21.6	126.6	23.9	19.7	66.9	0.0
% WITH CAPABILITY	58.7	54.3	51.1	1.8	39.5	62.5	4.7	0.0
NEW JERSEY								
ESTIMATED POPULATION	2,636	2,630	2,426	9	1,496	3,300	318	39
% STANDARD ERROR	12.2	12.1	12.6	146.5	15.7	11.0	37.2	107.5
% WITH CAPABILITY	61.0	60.9	56.1	0.2	34.6	76.3	7.4	0.9
NEW MEXICO								
ESTIMATED POPULATION	1,420	1,440	1,472	0	1,101	1,419	305	19
% STANDARD ERROR	16.5	16.4	16.4	0.0	17.7	16.5	38.3	154.5
% WITH CAPABILITY	53.4	54.1	55.3	0.0	41.4	53.4	11.5	0.7

7.8 1989 GENERAL AVIATION AIRCRAFT WITH PRECISION APPROACH AND TRANSPONDER EQUIPMENT  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

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STATE	PRECISION APPROACH EQUIPMENT				TRANSPONDER EQUIPMENT			
	LOCALIZER	MARKER	GLIDE	MLS	NO PREC	TRANSPOND	ALTIT	MOD S
		BEACON	SLOPE		EQUIP		ENCODE	CAP
								AVIOD EQ
								EQUIP
NEW YORK								
ESTIMATED POPULATION	4,270	3,923	3,576	52	3,175	5,134	4,024	339
% STANDARD ERROR	9.5	9.8	10.2	54.6	10.6	8.7	9.7	33.0
% WITH CAPABILITY	56.3	51.7	47.1	0.7	41.8	67.7	53.0	4.5
NORTH CAROLINA								
ESTIMATED POPULATION	3,333	3,088	2,765	2	1,987	4,291	3,327	241
% STANDARD ERROR	10.3	10.7	11.4	408.1	14.0	9.3	10.4	36.2
% WITH CAPABILITY	59.5	55.1	49.4	0.0	35.5	76.6	59.4	4.3
NORTH DAKOTA								
ESTIMATED POPULATION	516	509	534	3	1,269	923	631	40
% STANDARD ERROR	28.0	28.2	27.7	299.2	17.5	21.7	26.1	100.8
% WITH CAPABILITY	28.1	27.7	29.1	0.2	69.2	50.3	34.4	2.2
OHIO								
ESTIMATED POPULATION	4,878	4,896	4,140	11	4,050	6,393	5,259	399
% STANDARD ERROR	8.7	8.7	9.5	72.7	9.8	7.7	8.4	29.7
% WITH CAPABILITY	53.3	53.5	45.3	0.1	44.3	69.9	57.5	4.4
OKLAHOMA								
ESTIMATED POPULATION	2,478	2,483	2,274	0	1,840	3,305	2,209	234
% STANDARD ERROR	12.6	12.5	13.1	0.0	14.9	11.1	13.3	39.3
% WITH CAPABILITY	55.3	55.4	50.7	0.0	41.1	73.7	49.3	5.2
OREGON								
ESTIMATED POPULATION	2,626	2,650	2,344	0	2,510	3,543	2,788	326
% STANDARD ERROR	12.0	12.0	12.9	0.0	12.1	10.5	11.8	35.4
% WITH CAPABILITY	49.4	49.9	44.1	0.0	47.2	66.7	52.5	6.1
PENNSYLVANIA								
ESTIMATED POPULATION	3,747	3,462	3,245	21	2,873	4,686	4,043	294
% STANDARD ERROR	10.0	10.3	10.6	113.9	11.5	9.0	9.7	35.4
% WITH CAPABILITY	55.1	50.9	47.7	0.3	42.3	68.9	59.5	4.3
RHODE ISLAND								
ESTIMATED POPULATION	385	344	282	3	91	410	380	48
% STANDARD ERROR	33.6	35.6	39.3	387.4	63.8	32.4	33.8	94.4
% WITH CAPABILITY	77.5	69.1	56.8	0.7	18.3	82.5	76.4	9.6



7.8 1989 GENERAL AVIATION AIRCRAFT WITH PRECISION APPROACH AND TRANSPONDER EQUIPMENT  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

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STATE	PRECISION			APPROACH	EQUIPMENT		'TRANSPONDER EQUIPMENT				
	LOCALIZER	MARKER BEACON	GLIDE SLOPE	MLS	NO PREC EQUIP	TRNSPOND	ALTTT ENCODE	MOD S CAP	COLLISION AVIOD	NO TRANS EQ	
SOUTH CAROLINA	1,320	1,230	1,183	1	760	1,762	1,372	86	1	466	
	17.1	17.5	17.8	426.2	22.2	15.0	16.7	68.8	426.2	27.0	
	59.2	55.2	53.1	0.1	34.1	79.1	61.6	3.8	0.1	20.9	
SOUTH DAKOTA	496	494	420	0	987	791	422	56	2	700	
	28.7	28.9	31.2	0.0	19.4	23.5	31.0	86.4	402.0	21.5	
	33.3	33.1	28.2	0.0	66.2	53.1	28.3	3.8	0.1	46.9	
TENNESSEE	2,283	2,323	1,998	25	1,051	2,910	2,166	177	0	728	
	12.5	12.5	13.5	78.0	18.9	11.4	13.0	43.2	0.0	21.8	
	62.8	63.9	54.9	0.7	28.9	80.0	59.5	4.9	0.0	20.0	
TEXAS	11,579	10,729	10,178	45	8,145	14,934	12,270	1,070	75	5,233	
	5.5	5.7	5.9	102.0	6.8	5.0	5.5	19.2	73.1	8.2	
	57.4	53.2	50.5	0.2	40.4	74.0	60.8	5.3	0.4	26.0	
UTAH	831	686	715	0	596	1,202	961	66	2	349	
	21.9	23.6	23.6	0.0	26.7	18.6	21.0	69.2	404.3	34.9	
	53.6	44.2	46.1	0.0	38.4	77.5	62.0	4.3	0.1	22.5	
VERMONT	310	260	244	0	302	462	276	12	0	159	
	34.0	36.9	37.8	0.0	34.1	28.9	35.8	129.8	0.0	40.0	
	50.0	41.9	39.2	0.0	48.6	74.3	44.4	2.0	0.0	25.7	
VIRGINIA	2,235	2,130	1,912	0	1,432	2,833	2,320	149	60	945	
	13.0	13.3	14.0	0.0	16.1	11.7	12.8	48.7	87.2	19.2	
	59.2	56.4	50.6	0.0	37.9	75.0	61.4	4.0	1.6	25.0	
WASHINGTON	3,532	3,497	3,083	0	3,933	5,354	4,408	525	98	2,402	
	10.4	10.5	11.2	0.0	9.7	8.4	9.3	29.2	67.4	12.4	
	45.5	45.1	39.8	0.0	50.7	69.0	56.8	6.8	1.3	31.0	

7.8 1989 GENERAL AVIATION AIRCRAFT WITH PRECISION APPROACH AND TRANSPONDER EQUIPMENT  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

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STATE	PRECISION			APPROACH	EQUIPMENT		TRANSPONDER EQUIPMENT				
	LOCALIZER	MARKER BEACON	GLIDE SLOPE	MLS	NO PREC EQUIP	TRNSPOND	ALTIT ENCODE	MOD S CAP	COLLISION AVIOD EQ	NO TRANS EQUIP	
WEST VIRGINIA											
ESTIMATED POPULATION	498	522	481	0	505	669	548	36	0	403	
% STANDARD ERROR	28.1	27.3	28.6	0.0	30.1	24.7	26.6	118.3	0.0	33.7	
% WITH CAPABILITY	46.4	48.7	44.8	0.0	47.2	62.4	51.1	3.4	0.0	37.6	
WISCONSIN											
ESTIMATED POPULATION	2,247	2,306	2,257	5	2,928	3,092	2,466	346	0	2,226	
% STANDARD ERROR	13.2	13.1	13.2	208.6	11.7	11.4	12.8	36.0	0.0	13.3	
% WITH CAPABILITY	42.3	43.4	42.4	0.1	55.1	58.1	46.4	6.5	0.0	41.9	
WYOMING											
ESTIMATED POPULATION	432	422	349	16	472	661	494	42	0	299	
% STANDARD ERROR	29.0	29.4	32.0	141.9	26.8	23.9	27.5	99.7	0.0	31.8	
% WITH CAPABILITY	45.0	44.0	36.4	1.6	49.2	68.9	51.5	4.4	0.0	31.1	
PUERTO RICO											
ESTIMATED POPULATION	266	262	228	0	72	290	167	3	1	56	
% STANDARD ERROR	35.9	36.8	39.1	0.0	84.9	35.1	47.1	400.8	621.2	97.1	
% WITH CAPABILITY	77.0	75.8	65.9	0.0	20.9	83.9	48.1	0.9	0.3	16.1	
OTHER U.S. TERRITORIES											
ESTIMATED POPULATION	81	76	75	0	11	87	73	2	1	5	
% STANDARD ERROR	63.0	66.3	64.9	0.0	192.7	61.3	65.8	149.5	409.9	298.3	
% WITH CAPABILITY	87.6	82.9	81.0	0.0	12.4	94.5	79.2	2.6	1.1	5.5	
TOTAL											
ESTIMATED POPULATION	135,522	130,795	118,955	762	110,915	181,468	145,889	13,299	1,451	75,228	
% STANDARD ERROR	0.9	0.8	1.0	20.1	1.0	0.5	0.9	5.1	16.2	1.3	
% WITH CAPABILITY	52.8	51.0	46.3	0.3	43.2	70.7	56.8	5.2	0.6	29.3	

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

7.9 1989 GENERAL AVIATION AIRCRAFT WITH NAVIGATION EQUIPMENT  
BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

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BASIC NAVIGATION EQUIPMENT

AIRCRAFT TYPE	VOR 100CH PORT	VOR 100CH FXD	VOR 200CH PORT	VOR 200CH FXD	1+ VOR	ADF	DME	RNAV
FIXED WING								
FIXEL WING - PISTON								
1 ENG: 1-3 SEATS								
ESTIMATED POPULATION	1,777	25,453	5,162	21,470	4,259	8,364	2,338	1,021
% STANDARD ERROR	15.7	3.0	8.6	3.7	9.5	6.4	12.4	20.2
% WITH CAPABILITY	2.0	29.0	5.9	24.4	4.8	9.5	2.7	1.2
1 ENG: 4+ SEATS								
ESTIMATED POPULATION	1,531	45,503	6,548	74,212	16,744	85,626	51,143	13,428
% STANDARD ERROR	16.2	2.3	7.7	1.4	4.6	1.0	1.9	4.9
% WITH CAPABILITY	1.3	37.8	5.4	61.7	13.9	71.2	42.5	11.2
1 ENGINE: TOTAL								
ESTIMATED POPULATION	3,308	70,956	11,710	95,682	21,003	93,990	53,481	14,449
% STANDARD ERROR	11.3	1.8	5.7	1.4	4.1	1.1	1.9	4.8
% WITH CAPABILITY	1.6	34.1	5.6	46.0	10.1	45.2	25.7	6.9
2 ENG: 1-6 SEATS								
ESTIMATED POPULATION	163	4,495	867	13,162	1,932	16,501	14,558	6,680
% STANDARD ERROR	48.0	7.6	18.5	2.6	12.2	1.2	2.1	5.1
% WITH CAPABILITY	0.9	25.2	4.9	73.8	10.8	92.5	81.6	37.4
2 ENG: 7+ SEATS								
ESTIMATED POPULATION	187	1,697	379	6,677	843	7,849	7,544	4,398
% STANDARD ERROR	43.6	11.6	26.6	3.1	17.1	1.5	1.9	5.1
% WITH CAPABILITY	2.1	19.5	4.4	76.8	9.7	90.3	86.8	50.6
2 ENGINE: TOTAL								
ESTIMATED POPULATION	349	6,193	1,246	19,839	2,776	24,349	22,102	11,078
% STANDARD ERROR	32.3	6.3	15.2	2.0	10.0	1.0	1.5	3.7
% WITH CAPABILITY	1.3	23.3	4.7	74.8	10.5	91.8	83.3	41.8
PISTON: OTHER								
ESTIMATED POPULATION	0	5	0	174	0	171	137	114
% STANDARD ERROR	0.0	83.4	0.0	4.1	0.0	4.4	5.5	0.0
% WITH CAPABILITY	0.0	2.4	0.0	89.9	0.0	88.3	70.5	58.8
PISTON: TOTAL								
ESTIMATED POPULATION	3,657	77,154	12,955	115,694	23,779	118,511	75,719	25,641
% STANDARD ERROR	10.7	1.8	5.4	1.2	3.8	0.9	1.4	3.1
% WITH CAPABILITY	1.6	32.9	5.5	49.3	10.1	50.5	32.2	10.9

7.9 1989 GENERAL AVIATION AIRCRAFT WITH NAVIGATION EQUIPMENT  
BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

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AIRCRAFT TYPE	LONG RANGE NAVIGATION EQUIPMENT										OTHER NAVIGATION EQUIPMENT				
	LORAN					OMEGA		OTHER		RADAR		THUNDER		NO	
	LORAN C	VFR ONLY	NAV IFR	APP IFR	IFR			LRNAV	ALTIM	WEATHER RADAR	STM DET	NAV EQ			
FIXED WING															
FIXED WING - PISTON															
1 ENG: 1-3 SEATS															
ESTIMATED POPULATION	12,277	11,863	516	252	93	130	96	131	209	35,324					
% STANDARD ERROR	5.4	5.5	28.8	38.7	83.5	62.5	68.7	70.1	45.8	2.1					
% WITH CAPABILITY	14.0	12.5	0.6	0.3	0.1	0.1	0.1	0.1	0.2	40.2					
1 ENG: 4+ SEATS															
ESTIMATED POPULATION	49,318	45,773	6,281	2,411	78	317	2,944	1,627	8,858	4,912					
% STANDARD ERROR	2.2	2.3	7.8	13.0	69.7	35.4	11.3	14.6	6.2	7.9					
% WITH CAPABILITY	41.0	38.1	5.2	2.0	0.1	0.3	2.4	1.4	7.4	4.1					
1 ENGINE: TOTAL															
ESTIMATED POPULATION	61,595	57,636	6,798	2,663	171	446	3,040	1,759	9,067	40,236					
% STANDARD ERROR	2.0	2.2	7.5	12.3	55.5	31.0	11.2	14.5	6.1	2.1					
% WITH CAPABILITY	29.6	27.7	3.3	1.3	0.1	0.2	1.5	0.8	4.4	19.3					
2 ENG: 1-6 SEATS															
ESTIMATED POPULATION	8,866	7,360	2,193	568	30	302	3,075	5,752	2,946	622					
% STANDARD ERROR	4.3	5.2	11.3	23.0	85.7	32.8	8.6	5.4	9.8	23.3					
% WITH CAPABILITY	49.7	41.3	12.3	3.2	0.2	1.7	17.2	32.2	16.5	3.5					
2 ENG: 7+ SEATS															
ESTIMATED POPULATION	3,927	3,344	905	536	103	196	2,716	4,327	898	372					
% STANDARD ERROR	6.5	7.6	17.9	24.5	67.5	39.7	7.8	4.8	18.4	21.1					
% WITH CAPABILITY	45.2	38.5	10.4	6.2	1.2	2.3	31.3	49.8	10.3	4.3					
2 ENGINE: TOTAL															
ESTIMATED POPULATION	12,792	10,704	3,098	1,104	133	498	5,791	10,079	3,844	994					
% STANDARD ERROR	3.6	4.3	9.5	16.8	55.7	25.3	5.8	3.7	8.6	16.6					
% WITH CAPABILITY	48.2	40.4	11.7	4.2	0.5	1.9	21.8	38.0	14.5	3.7					
PISTON: OTHER															
ESTIMATED POPULATION	118	61	57	0	0	0	62	66	59	2					
% STANDARD ERROR	34.3	11.7	69.8	0.0	0.0	0.0	64.7	60.9	67.4	127.2					
% WITH CAPABILITY	60.7	31.3	29.4	0.0	0.0	0.0	31.9	33.9	30.5	1.1					
PISTON: TOTAL															
ESTIMATED POPULATION	74,505	68,401	9,953	3,767	304	944	8,893	11,903	12,970	41,232					
% STANDARD ERROR	1.8	1.9	6.0	10.0	39.6	19.8	5.4	3.8	5.0	2.1					
% WITH CAPABILITY	31.7	29.1	4.2	1.6	0.1	0.4	3.8	5.1	5.5	17.6					

7.9 1989 GENERAL AVIATION AIRCRAFT WITH NAVIGATION EQUIPMENT  
BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

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BASIC NAVIGATION EQUIPMENT

AIRCRAFT TYPE	VOR 100CH PORT	VOR 100CH FXD	VOR 200CH PORT	VOR 200CH FXD	1+ VOR	ADF	DME	RNAV
FIXED WING - TURBOPROP								
2 ENG: 1-12 SEATS								
ESTIMATED POPULATION	22	847	235	4,304	543	4,945	4,932	3,657
% STANDARD ERROR	124.1	14.8	30.9	2.8	19.8	1.3	1.3	4.1
% WITH CAPABILITY	0.4	16.7	4.6	84.7	10.7	97.3	97.0	72.0
2 ENG: 13+ SEATS								
ESTIMATED POPULATION	2	133	14	1,202	39	1,324	1,337	422
% STANDARD ERROR	166.4	34.9	97.6	3.7	78.5	3.5	3.2	18.6
% WITH CAPABILITY	0.2	9.3	1.0	83.4	2.7	91.8	92.7	29.3
2 ENGINE: TOTAL								
ESTIMATED POPULATION	24	980	248	5,507	582	6,269	6,269	4,079
% STANDARD ERROR	112.9	13.7	29.7	2.4	19.2	1.3	1.2	4.2
% WITH CAPABILITY	0.4	15.0	3.8	84.4	8.9	96.1	96.1	62.5
TURBOPROP: OTHER								
ESTIMATED POPULATION	0	38	0	111	31	124	108	20
% STANDARD ERROR	0.0	75.1	0.0	30.2	86.7	26.8	30.2	105.4
% WITH CAPABILITY	0.0	11.8	0.0	34.0	9.5	38.0	33.0	6.1
TURBOPROP: TOTAL								
ESTIMATED POPULATION	24	1,018	248	5,617	613	6,393	6,376	4,099
% STANDARD ERROR	112.9	13.5	29.7	2.4	18.8	1.3	1.3	4.2
% WITH CAPABILITY	0.3	14.9	3.6	82.0	8.9	93.3	93.1	59.8
FIXED WING - TURBOJET								
2 ENGINE TURBOJET								
ESTIMATED POPULATION	56	618	130	3,652	415	4,092	4,085	2,343
% STANDARD ERROR	45.5	14.5	26.7	2.3	18.4	1.1	1.0	4.9
% WITH CAPABILITY	1.3	14.7	3.1	86.8	9.9	97.2	97.0	55.7
TURBOJET: OTHER								
ESTIMATED POPULATION	0	60	20	329	29	410	425	155
% STANDARD ERROR	0.0	42.8	63.1	10.8	54.6	7.7	7.4	19.8
% WITH CAPABILITY	0.0	11.4	3.8	62.3	5.4	77.8	80.6	29.5
TURBOJET: TOTAL								
ESTIMATED POPULATION	56	678	150	3,981	443	4,502	4,509	2,498
% STANDARD ERROR	45.5	13.8	24.6	2.3	17.5	1.2	1.1	4.8
% WITH CAPABILITY	1.2	14.3	3.2	84.1	9.4	95.1	95.2	52.8

7.9 1989 GENERAL AVIATION AIRCRAFT WITH NAVIGATION EQUIPMENT  
BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

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LONG RANGE NAVIGATION EQUIPMENT

AIRCRAFT TYPE	LONG RANGE NAVIGATION EQUIPMENT						OTHER NAVIGATION EQUIPMENT			
	LORAN C	VFR ONLY	NAV IFR	APP IFR	OMEGA	OTHER LRNAV	RADAR ALTIM	WEATHER RADAR	THUNDER STM DET	NO NAV EQ
FIXED WING - TURBOPROP										
2 ENG: 1-12 SEATS										
ESTIMATED POPULATION	2,796	1,934	995	393	372	446	4,149	4,523	1,082	111
% STANDARD ERROR	6.2	8.9	13.5	23.2	22.5	22.7	3.2	2.4	12.9	52.5
% WITH CAPABILITY	55.0	38.1	19.6	7.7	7.3	8.8	81.6	89.0	21.3	2.2
2 ENG: 13+ SEATS										
ESTIMATED POPULATION	325	151	177	154	128	252	876	1,034	104	72
% STANDARD ERROR	18.0	24.2	30.1	28.0	33.6	32.8	10.8	8.7	26.5	24.4
% WITH CAPABILITY	22.5	10.5	12.3	10.7	8.8	17.5	60.8	71.7	7.2	5.0
2 ENGINE: TOTAL										
ESTIMATED POPULATION	3,121	2,085	1,172	547	499	698	5,026	5,558	1,186	183
% STANDARD ERROR	5.9	8.5	12.3	18.5	18.8	18.7	3.3	2.5	12.0	33.3
% WITH CAPABILITY	47.8	32.0	18.0	8.4	7.7	10.7	77.0	85.2	18.2	2.8
TURBOPROP: OTHER										
ESTIMATED POPULATION	70	69	9	8	32	15	88	63	3	186
% STANDARD ERROR	48.6	49.5	159.3	182.4	85.6	130.6	36.7	42.8	196.6	18.7
% WITH CAPABILITY	21.5	21.1	2.8	2.3	9.7	4.6	27.0	19.3	0.9	57.1
TURBOPROP: TOTAL										
ESTIMATED POPULATION	3,191	2,154	1,181	554	531	713	5,114	5,621	1,189	369
% STANDARD ERROR	5.8	8.4	12.3	18.4	18.4	18.5	3.3	2.5	12.0	19.0
% WITH CAPABILITY	46.6	31.4	17.2	8.1	7.8	10.4	74.7	82.1	17.4	5.4
FIXED WING - TURBOJET										
2 ENGINE TURBOJET										
ESTIMATED POPULATION	2,119	878	1,025	1,021	1,964	1,201	3,903	3,535	839	60
% STANDARD ERROR	5.7	11.6	10.4	10.2	5.4	7.9	1.4	2.6	10.5	57.6
% WITH CAPABILITY	50.4	20.9	24.4	24.2	46.7	28.5	92.7	84.0	19.9	1.4
TURBOJET: OTHER										
ESTIMATED POPULATION	196	101	101	89	272	183	305	290	60	90
% STANDARD ERROR	18.3	31.6	25.1	26.2	12.6	16.1	10.6	10.5	33.5	32.9
% WITH CAPABILITY	37.2	19.2	19.2	16.8	51.7	34.8	57.8	55.0	11.4	17.1
TURBOJET: TOTAL										
ESTIMATED POPULATION	2,316	979	1,126	1,109	2,237	1,384	4,208	3,825	899	150
% STANDARD ERROR	5.5	10.9	9.7	9.6	5.0	7.1	1.5	2.5	10.1	30.4
% WITH CAPABILITY	48.9	20.7	23.8	23.4	47.2	29.2	88.8	80.8	19.0	3.2

7.9 1989 GENERAL AVIATION AIRCRAFT WITH NAVIGATION EQUIPMENT  
BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

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AIRCRAFT TYPE	BASIC NAVIGATION EQUIPMENT						
	VOR 100CH PORT	VOR 100CH FXD	VOR 200CH PORT	VOR 200CH FXD	1+ VOR	ADF	DME RNAV
FIXED WING: TOTAL	3,737	78,850	13,354	125,293	24,835	129,405	86,605
ESTIMATED POPULATION	10.5	1.7	5.3	1.1	3.7	0.8	1.2
% STANDARD ERROR	1.5	32.0	5.4	50.9	10.1	52.5	35.1
% WITH CAPABILITY							13.1
ROTORCRAFT							
PISTON							
ESTIMATED POPULATION	N/A	N/A	N/A	N/A	N/A	N/A	N/A
% STANDARD ERROR	N/A	N/A	N/A	N/A	N/A	N/A	N/A
% WITH CAPABILITY	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TURBINE							
ESTIMATED POPULATION	N/A	N/A	N/A	N/A	N/A	N/A	N/A
% STANDARD ERROR	N/A	N/A	N/A	N/A	N/A	N/A	N/A
% WITH CAPABILITY	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ROTORCRAFT: TOTAL							
ESTIMATED POPULATION	N/A	N/A	N/A	N/A	N/A	N/A	N/A
% STANDARD ERROR	N/A	N/A	N/A	N/A	N/A	N/A	N/A
% WITH CAPABILITY	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OTHER							
ESTIMATED POPULATION	121	40	274	166	16	69	24
% STANDARD ERROR	45.6	64.2	27.5	32.6	106.9	60.3	96.1
% WITH CAPABILITY	1.2	0.4	2.7	1.6	0.2	0.7	0.2
							7
							69.2
							0.1
TOTAL	3,858	78,890	13,628	125,458	24,850	129,474	86,629
ESTIMATED POPULATION	10.2	1.7	5.2	1.1	3.7	0.8	1.2
% STANDARD ERROR	1.5	30.7	5.3	48.9	9.7	50.4	33.7
% WITH CAPABILITY							12.6

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

7.9 1989 GENERAL AVIATION AIRCRAFT WITH NAVIGATION EQUIPMENT  
BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

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AIRCRAFT TYPE	LONG RANGE NAVIGATION EQUIPMENT										OTHER			NAVIGATION		EQUIPMENT	
	-----LORAN-----										OMEGA	OTHER LRNAV	RADAR ALTIM	WEATHER RADAR	THUNDER STM DET	NO NAV EQ	
	LORAN C	VFR ONLY	NAV	IFR	APP	IFR											
FIXED WING: TOTAL																	
ESTIMATED POPULATION	80,012	71,533	12,260	5,430			3,072	3,041	18,214	21,349	15,058	41,751					
% STANDARD ERROR	1.7	1.9	5.1	7.5			6.2	8.2	2.8	2.3	4.4	2.0					
% WITH CAPABILITY	32.5	29.0	5.0	2.2			1.2	1.2	7.4	8.7	6.1	16.9					
ROTORCRAFT																	
PISTON																	
ESTIMATED POPULATION	N/A	N/A	N/A	N/A			N/A	N/A	N/A	N/A	N/A	N/A					
% STANDARD ERROR	N/A	N/A	N/A	N/A			N/A	N/A	N/A	N/A	N/A	N/A					
% WITH CAPABILITY	N/A	N/A	N/A	N/A			N/A	N/A	N/A	N/A	N/A	N/A					
TURBINE																	
ESTIMATED POPULATION	N/A	N/A	N/A	N/A			N/A	N/A	N/A	N/A	N/A	N/A					
% STANDARD ERROR	N/A	N/A	N/A	N/A			N/A	N/A	N/A	N/A	N/A	N/A					
% WITH CAPABILITY	N/A	N/A	N/A	N/A			N/A	N/A	N/A	N/A	N/A	N/A					
ROTORCRAFT: TOTAL																	
ESTIMATED POPULATION	N/A	N/A	N/A	N/A			N/A	N/A	N/A	N/A	N/A	N/A					
% STANDARD ERROR	N/A	N/A	N/A	N/A			N/A	N/A	N/A	N/A	N/A	N/A					
% WITH CAPABILITY	N/A	N/A	N/A	N/A			N/A	N/A	N/A	N/A	N/A	N/A					
OTHER																	
ESTIMATED POPULATION	92	65	27	0			2	3	32	11	8	9,654					
% STANDARD ERROR	39.7	35.0	106.3	0.0			165.2	125.3	102.3	154.6	144.5	1.2					
% WITH CAPABILITY	0.9	0.6	0.3	0.0			0.0	0.0	0.3	0.1	0.1	93.7					
TOTAL																	
ESTIMATED POPULATION	80,103	71,598	12,287	5,430			3,074	3,044	18,246	21,360	15,067	51,405					
% STANDARD ERROR	1.7	1.9	5.1	7.5			6.2	8.2	2.8	2.3	4.4	1.7					
% WITH CAPABILITY	31.2	27.9	4.8	2.1			1.2	1.2	7.1	8.3	5.9	20.0					

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.



7.10 1989 GENERAL AVIATION AIRCRAFT WITH NAVIGATION EQUIPMENT  
BY PRIMARY USE  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 4

PRIMARY USE	BASIC NAVIGATION EQUIPMENT							
	VOR 100CH PORT	VOR 100CH FXD	VOR 200CH PORT	VOR 200CH FXD	1+ VOR	ADF	DME	RNAV
CORPORATE ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	152	1,785	358	9,799	993	11,093	10,556	7,019
	47.3	12.7	23.5	4.1	15.5	3.9	3.8	4.8
	1.3	15.4	3.1	84.5	8.6	95.7	91.0	60.5
BUSINESS ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	470	12,546	2,156	25,094	5,034	30,737	24,803	10,784
	28.9	5.3	13.2	3.5	8.5	3.0	3.3	5.3
	1.3	33.9	5.8	67.8	13.6	83.1	67.0	29.1
PERSONAL ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	2,031	44,415	9,157	60,622	15,056	59,210	33,837	9,081
	14.2	2.6	6.4	2.1	5.0	2.0	2.9	6.3
	1.6	35.9	7.4	49.0	12.2	47.9	27.3	7.3
INSTRUCTIONAL ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	232	6,225	259	10,122	1,026	9,203	4,498	926
	44.8	8.3	41.7	6.3	21.0	6.6	9.3	20.6
	1.4	36.5	1.5	59.3	6.0	53.9	26.3	5.4
AERIAL APPLICATION ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	24	308	5	607	57	441	296	155
	93.2	35.1	265.2	25.0	90.2	28.6	34.4	49.9
	0.4	4.9	0.1	9.7	0.9	7.0	4.7	2.5
AERIAL OBSERVATION ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	60	1,354	98	2,504	327	2,435	1,280	407
	79.0	16.9	64.8	12.2	36.1	12.5	16.9	29.2
	1.3	30.0	2.2	55.5	7.3	54.0	28.4	9.0
OTHER WORK USE ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	0	213	83	400	53	358	210	33
	0.0	39.9	68.3	29.9	87.0	31.4	39.8	103.7
	0.0	11.7	4.6	21.9	2.9	19.6	11.5	1.8
COMMUTER AIR CARRIER ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	0	82	16	1,201	17	1,295	1,198	410
	0.0	49.8	87.0	12.6	122.5	11.8	12.4	26.4
	0.0	5.7	1.1	83.5	1.2	90.0	83.3	28.5

7.10 1989 GENERAL AVIATION AIRCRAFT WITH NAVIGATION EQUIPMENT  
BY PRIMARY USE  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 4

PRIMARY USE	LONG RANGE NAVIGATION EQUIPMENT										OTHER NAVIGATION EQUIPMENT			
	LORAN C	VFR ONLY	NAV IFR	APP IFR	OMEGA	OTHER LRNAV	RADAR ALTIM	WEATHER RADAR	THUNDER STM DET	NO NAV EQ				
CORPORATE ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	5,923	3,726	2,139	1,367	2,206	1,540	7,805	7,939	2,302	81				
	5.9	8.2	9.9	10.5	6.2	10.1	3.9	3.9	9.7	52.1				
	51.1	32.1	18.4	11.8	19.0	13.3	67.3	68.5	19.8	0.7				
BUSINESS ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	18,528	16,183	3,608	1,268	114	426	4,097	5,331	6,577	551				
	4.1	4.5	9.6	16.4	33.7	26.9	8.4	7.1	7.2	19.7				
	50.1	43.7	9.8	3.4	0.3	1.2	11.1	14.4	17.8	1.5				
PERSONAL ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	42,863	39,685	5,206	1,958	180	250	2,609	2,869	4,886	18,300				
	2.7	2.8	8.7	14.1	48.2	34.1	11.2	10.4	8.8	3.1				
	34.6	32.1	4.2	1.6	0.1	0.2	2.1	2.3	3.9	14.8				
INSTRUCTIONAL ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	2,757	2,493	406	248	41	77	240	390	278	1,045				
	12.2	12.9	29.2	41.7	87.6	73.3	33.0	28.5	35.3	16.9				
	16.1	14.6	2.4	1.5	0.2	0.5	1.4	2.3	1.6	6.1				
AERIAL APPLICATION ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	320	314	7	0	7	52	8	16	6	5,298				
	31.1	31.3	213.3	0.0	358.4	70.5	310.0	205.9	238.6	3.1				
	5.1	5.0	0.1	0.0	0.1	0.8	0.1	0.3	0.1	84.7				
AERIAL OBSERVATION ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	2,043	1,951	66	73	39	41	138	111	62	670				
	13.8	14.1	61.7	71.8	82.2	89.9	42.5	44.6	71.3	20.2				
	45.3	43.3	1.5	1.6	0.9	0.9	3.1	2.5	1.4	14.9				
OTHER WORK USE ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	182	169	15	0	12	8	59	49	19	1,132				
	46.2	47.1	183.8	0.0	174.8	123.8	74.7	77.6	147.7	15.7				
	10.0	9.3	0.8	0.0	0.7	0.4	3.2	2.7	1.0	62.1				
COMMUTER AIR CARRIER ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	164	112	52	43	0	7	423	877	42	129				
	35.2	44.2	57.2	53.8	0.0	89.8	19.9	14.2	56.4	50.8				
	11.4	7.8	3.6	3.0	0.0	0.5	29.4	61.0	2.9	8.9				

7.10 1989 GENERAL AVIATION AIRCRAFT WITH NAVIGATION EQUIPMENT  
BY PRIMARY USE  
(EXCLUDES ROTORCRAFT)

PAGE 3 OF 4

PRIMARY USE	BASIC NAVIGATION EQUIPMENT						
	VOR 100CH PORT	VOR 100CH FXD	VOR 200CH PORT	VOR 200CH FXD	1+ VOR	ADF	DME RNAV
AIR TAXI ESTIMATED POPULATION ‡ STANDARD ERROR ‡ WITH CAPABILITY	95	1,098	91	4,495	570	5,097	4,479
	58.1	17.2	56.7	7.7	23.5	7.2	7.7
	1.7	20.0	1.7	81.9	10.4	92.9	81.6
OTHER ESTIMATED POPULATION ‡ STANDARD ERROR ‡ WITH CAPABILITY	16	630	69	1,838	147	1,620	1,356
	96.2	18.8	46.0	13.2	43.4	13.0	13.3
	0.5	19.0	2.1	55.4	4.4	48.8	40.8
INACTIVE ESTIMATED POPULATION ‡ STANDARD ERROR ‡ WITH CAPABILITY	552	10,002	1,368	8,510	1,530	7,637	3,855
	27.5	4.9	18.3	5.8	14.3	5.2	7.1
	1.2	22.6	3.1	19.2	3.5	17.3	8.7
TOTAL ESTIMATED POPULATION ‡ STANDARD ERROR ‡ WITH CAPABILITY	3,858	78,890	13,628	125,458	24,850	129,474	86,629
	10.2	1.7	5.2	1.1	3.7	0.8	1.2
	1.5	30.7	5.3	48.9	9.7	50.4	33.7
							12.6

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

7.10 1989 GENERAL AVIATION AIRCRAFT WITH NAVIGATION EQUIPMENT  
BY PRIMARY USE  
(EXCLUDES ROTORCRAFT)

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PRIMARY USE	LONG RANGE NAVIGATION EQUIPMENT							OTHER NAVIGATION EQUIPMENT			
	LORAN C	VFR ONLY	NAV IFR	APP IFR	OMEGA	OTHER LRNAV		RADAR ALTIM	WEATHER RADAR	THUNDER STM DET	NO NAV EQ
-----LORAN-----											
AIR TAXI											
ESTIMATED POPULATION	2,103	1,957	328	124	138	199		1,320	2,489	703	123
% STANDARD ERROR	11.9	12.5	27.2	45.5	36.3	36.3		13.5	9.8	20.7	57.0
% WITH CAPABILITY	38.3	35.7	6.0	2.3	2.5	3.6		24.1	45.3	12.8	2.2
OTHER											
ESTIMATED POPULATION	1,200	1,082	169	35	235	156		562	603	124	765
% STANDARD ERROR	17.1	18.5	32.3	61.4	36.9	48.5		18.9	18.0	47.4	21.1
% WITH CAPABILITY	36.1	32.6	5.1	1.1	7.1	4.7		16.9	18.2	3.7	23.0
INACTIVE											
ESTIMATED POPULATION	3,337	3,138	255	205	73	110		790	772	191	24,100
% STANDARD ERROR	10.5	11.0	26.5	29.9	38.6	18.1		15.0	7.4	28.1	2.3
% WITH CAPABILITY	7.5	7.1	0.6	0.5	0.2	0.2		1.8	1.7	0.4	54.5
TOTAL											
ESTIMATED POPULATION	80,103	71,598	12,287	5,430	3,074	3,044		18,246	21,360	15,067	51,405
% STANDARD ERROR	1.7	1.9	5.1	7.5	6.2	8.2		2.8	2.3	4.4	1.7
% WITH CAPABILITY	31.2	27.9	4.8	2.1	1.2	1.2		7.1	8.3	5.9	20.0

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

7.11 1989 GENERAL AVIATION AIRCRAFT WITH NAVIGATION EQUIPMENT  
BY REGION OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

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REGION	BASIC NAVIGATION EQUIPMENT							
	VOR 100CH PORT	VOR 100CH FXD	VOR 200CH PORT	VOR 200CH FXD	1+ VOR	ADF	DME	RNAV
ALASKAN								
ESTIMATED POPULATION	197	3,477	341	3,106	706	4,293	1,026	346
% STANDARD ERROR	37.2	9.4	31.0	10.2	21.9	8.2	17.7	29.6
% WITH CAPABILITY	2.4	41.7	4.1	37.3	8.5	51.5	12.3	4.2
CENTRAL								
ESTIMATED POPULATION	209	4,256	593	5,813	1,020	6,314	4,178	2,077
% STANDARD ERROR	46.5	10.0	24.4	8.0	20.3	7.7	9.0	12.8
% WITH CAPABILITY	1.5	30.5	4.3	41.7	7.3	45.3	30.0	14.9
EASTERN								
ESTIMATED POPULATION	352	8,564	1,873	14,967	3,521	15,570	10,181	3,621
% STANDARD ERROR	31.3	6.8	14.8	4.9	10.8	4.7	5.7	9.6
% WITH CAPABILITY	1.2	30.2	6.6	52.8	12.4	54.9	35.9	12.8
GREAT LAKES								
ESTIMATED POPULATION	959	13,621	2,292	21,983	4,308	21,918	14,652	6,226
% STANDARD ERROR	21.5	5.3	13.1	4.0	9.6	3.9	4.7	7.2
% WITH CAPABILITY	2.1	29.9	5.0	48.2	9.4	48.1	32.1	13.7
NEW ENGLAND								
ESTIMATED POPULATION	155	3,081	831	5,235	1,027	5,331	3,368	1,334
% STANDARD ERROR	49.4	11.5	22.5	8.5	19.7	8.4	10.4	15.9
% WITH CAPABILITY	1.5	30.2	3.1	51.3	10.1	52.2	33.0	13.1
NORTHWEST MOUNTAIN								
ESTIMATED POPULATION	443	8,600	1,387	10,811	2,115	11,411	6,893	2,174
% STANDARD ERROR	32.1	6.7	17.2	5.9	13.8	5.6	7.1	12.6
% WITH CAPABILITY	1.7	33.9	5.5	42.6	8.3	45.0	27.2	8.6
SOUTHERN								
ESTIMATED POPULATION	340	12,362	2,204	22,117	4,005	23,152	15,639	6,034
% STANDARD ERROR	35.0	5.6	13.1	3.9	9.8	3.7	4.4	6.9
% WITH CAPABILITY	0.8	30.3	5.4	54.1	9.8	56.7	38.3	14.8
SOUTHWESTERN								
ESTIMATED POPULATION	266	10,070	1,610	16,123	2,988	17,485	12,148	4,596
% STANDARD ERROR	38.0	6.3	14.7	4.7	10.9	4.4	5.2	8.3
% WITH CAPABILITY	0.8	30.1	4.8	48.1	8.9	52.2	36.3	13.7

7.11 1989 GENERAL AVIATION AIRCRAFT WITH NAVIGATION EQUIPMENT  
BY REGION OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

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LONG RANGE NAVIGATION EQUIPMENT

REGION	LONG RANGE NAVIGATION EQUIPMENT							OTHER NAVIGATION EQUIPMENT			
	LORAN C	VFR ONLY	NAV IFR	APP IFR	OMEGA	OTHER LRNAV		RADAR ALTIM	WEATHER RADAR	THUNDER STM DET	NO NAV EQ
ALASKAN ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	2,781 10.6 33.4	2,673 10.9 32.1	174 34.8 2.1	68 50.2 0.8	9 88.9 0.1	3 225.8 0.0		160 45.5 1.9	109 49.3 1.3	32 120.8 0.4	1,345 14.2 16.2
	3,457 10.5 24.8	3,082 11.2 22.1	597 24.2 4.3	250 39.5 1.8	153 28.6 1.1	140 35.4 1.0		1,012 14.3 7.3	1,001 15.5 7.2	1,101 18.3 7.9	3,649 10.0 26.2
	9,893 6.1 34.9	8,818 6.6 31.1	1,470 14.9 5.2	800 18.6 2.8	493 16.8 1.7	540 19.6 1.9		2,639 10.0 9.3	2,777 9.6 9.8	2,228 12.7 7.9	5,347 7.7 18.8
GREAT LAKES ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	14,278 5.1 31.3	12,524 5.5 27.5	2,681 11.2 5.9	880 18.2 1.9	638 14.0 1.4	293 23.1 0.6		3,491 8.3 7.7	3,953 7.9 8.7	3,114 10.4 6.8	9,509 5.7 20.9
	4,061 9.7 39.8	3,816 10.1 37.4	278 32.4 2.7	152 45.6 1.5	59 44.3 0.6	65 59.4 0.6		464 21.5 4.5	710 19.1 6.9	775 21.5 7.6	1,603 14.1 15.7
	7,040 7.3 27.7	6,315 7.7 24.9	813 21.2 3.2	342 29.0 1.3	140 30.9 0.6	160 35.0 0.6		1,196 14.9 4.7	1,056 14.7 4.2	675 22.3 2.7	5,616 7.5 22.1
SOUTHERN ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	16,446 4.6 40.3	14,795 4.9 36.2	2,420 11.3 5.9	955 17.7 2.3	548 17.2 1.3	663 18.2 1.6		3,634 7.7 8.9	5,365 6.6 13.1	3,385 10.1 8.3	6,531 7.2 16.0
	9,397 6.2 28.1	8,413 6.7 25.1	1,599 14.5 4.8	715 22.8 2.1	459 22.2 1.4	221 31.7 0.7		2,630 9.8 7.9	3,668 8.2 11.0	2,267 12.5 6.8	7,163 6.6 21.4

7.11 1989 GENERAL AVIATION AIRCRAFT WITH NAVIGATION EQUIPMENT  
BY REGION OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

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REGION	BASIC NAVIGATION EQUIPMENT						
	VOR 100CH PORT	VOR 100CH FXD	VOR 200CH PORT	VOR 200CH FXD	1+ VOR	ADF	DME RNAV
WESTERN-PACIFIC ESTIMATED POPULATION ± STANDARD ERROR ± WITH CAPABILITY	918	13,269	2,373	23,093	4,902	21,715	16,981
	21.3	5.3	13.1	3.9	8.8	3.9	4.4
	2.1	30.3	5.4	52.7	11.2	49.5	38.7
TOTAL ESTIMATED POPULATION ± STANDARD ERROR ± WITH CAPABILITY	3,858	78,890	13,628	125,458	24,850	129,474	86,629
	10.2	1.7	5.2	1.1	3.7	0.8	1.2
	1.5	30.7	5.3	48.9	9.7	50.4	33.7
							32,245
							2.6
							12.6

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

7.11 1989 GENERAL AVIATION AIRCRAFT WITH NAVIGATION EQUIPMENT  
BY REGION OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

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REGION	LONG RANGE NAVIGATION EQUIPMENT							OTHER NAVIGATION EQUIPMENT			
	LORAN C	VFR ONLY	NAV IFR	APP IFR	OMEGA	OTHER LRNAV		RADAR ALTIM	WEATHER RADAR	THUNDER STM DET	NO NAV EQ
WESTERN-PACIFIC ESTIMATED POPULATION ± STANDARD ERROR ± WITH CAPABILITY	11,858	10,335	1,966	1,108	490	897		2,680	2,289	1,381	7,709
	5.5	6.0	13.8	17.1	22.4	18.7		9.9	9.8	15.6	6.3
	27.0	23.6	4.5	2.5	1.1	2.0		6.1	5.2	3.1	17.6
TOTAL ESTIMATED POPULATION ± STANDARD ERROR ± WITH CAPABILITY	80,103	71,598	12,287	5,430	3,074	3,044		18,246	21,360	15,067	51,405
	1.7	1.9	5.1	7.5	6.2	8.2		2.8	2.3	4.4	1.7
	31.2	27.9	4.8	2.1	1.2	1.2		7.1	8.3	5.9	20.0

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.



7.12 1989 GENERAL AVIATION AIRCRAFT WITH NAVIGATION EQUIPMENT  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

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STATE	BASIC NAVIGATION EQUIPMENT							
	VOR 100CH PORT	VOR 100CH FXD	VOR 200CH PORT	VOR 200CH FXD	1+ VOR	ADF	DME	RNAV
ALABAMA								
ESTIMATED POPULATION	58	1,118	192	2,151	348	2,136	1,361	594
% STANDARD ERROR	102.6	18.8	45.1	13.5	33.4	13.2	16.1	23.3
% WITH CAPABILITY	1.6	30.7	5.3	59.0	9.6	58.6	37.3	16.3
ALASKA								
ESTIMATED POPULATION	197	3,477	341	3,106	706	4,293	1,026	346
% STANDARD ERROR	37.2	9.4	31.0	10.2	21.9	8.2	17.7	29.6
% WITH CAPABILITY	2.4	41.7	4.1	37.3	8.5	51.5	12.3	4.2
ARIZONA								
ESTIMATED POPULATION	118	1,763	361	3,487	778	2,929	2,207	526
% STANDARD ERROR	61.8	15.2	36.6	10.7	23.4	11.5	12.7	25.5
% WITH CAPABILITY	1.9	28.6	5.8	56.5	12.6	47.4	35.7	8.5
ARKANSAS								
ESTIMATED POPULATION	10	907	153	1,151	201	1,476	902	375
% STANDARD ERROR	174.8	21.8	51.2	17.9	42.8	15.9	19.1	28.2
% WITH CAPABILITY	0.3	30.3	5.1	38.5	6.7	49.3	30.1	12.5
CALIFORNIA								
ESTIMATED POPULATION	699	10,401	1,790	18,259	3,841	17,374	13,583	4,375
% STANDARD ERROR	24.4	6.0	14.8	4.4	9.9	4.4	5.0	8.6
% WITH CAPABILITY	2.0	30.0	5.2	52.7	11.1	50.1	39.2	12.6
COLORADO								
ESTIMATED POPULATION	84	1,757	313	1,982	423	2,480	1,785	609
% STANDARD ERROR	73.6	15.8	34.7	14.3	31.0	12.6	14.7	24.6
% WITH CAPABILITY	1.6	33.9	6.0	38.2	8.1	47.8	34.4	11.7
CONNECTICUT								
ESTIMATED POPULATION	2	631	154	1,239	181	1,149	778	355
% STANDARD ERROR	290.1	25.7	54.4	17.9	48.1	18.5	21.7	31.6
% WITH CAPABILITY	0.1	27.6	6.7	54.2	7.9	50.3	34.1	15.5
DELAWARE								
ESTIMATED POPULATION	28	347	106	1,149	189	1,083	858	302
% STANDARD ERROR	125.1	33.2	54.1	18.2	43.4	18.0	19.6	32.6
% WITH CAPABILITY	1.8	22.0	6.8	72.8	12.0	68.7	54.4	19.1

7.12 1989 GENERAL AVIATION AIRCRAFT WITH NAVIGATION EQUIPMENT  
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(EXCLUDES ROTORCRAFT)

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STATE	LONG RANGE NAVIGATION EQUIPMENT										OTHER		NAVIGATION		EQUIPMENT	
	-----LORAN-----										OMEGA	OTHER LRNAV	RADAR ALTIM	WEATHER RADAR	THUNDER STM DET	NO NAV EQ
	LORAN C	VFR	ONLY	NAV	IFR	APP	IFR									
ALABAMA																
ESTIMATED POPULATION	1,643	1,535	190	64	72	67										
% STANDARD ERROR	15.4	16.0	40.5	75.6	52.1	64.7										
% WITH CAPABILITY	45.1	42.1	5.2	1.7	2.0	1.8										
ALASKA																
ESTIMATED POPULATION	2,781	2,673	174	68	9	3										
% STANDARD ERROR	10.6	10.9	34.8	50.2	88.9	225.8										
% WITH CAPABILITY	33.4	32.1	2.1	0.8	0.1	0.0										
ARIZONA																
ESTIMATED POPULATION	896	861	29	41	47	163										
% STANDARD ERROR	19.7	20.3	55.6	59.4	66.5	49.9										
% WITH CAPABILITY	14.5	13.9	0.5	0.7	0.8	2.6										
ARKANSAS																
ESTIMATED POPULATION	903	771	168	97	16	30										
% STANDARD ERROR	20.0	22.1	41.6	58.0	94.4	94.4										
% WITH CAPABILITY	30.2	25.8	5.6	3.2	0.5	1.0										
CALIFORNIA																
ESTIMATED POPULATION	9,861	8,570	1,675	849	416	691										
% STANDARD ERROR	6.1	6.6	15.0	19.0	20.9	20.5										
% WITH CAPABILITY	28.5	24.7	4.8	2.4	0.6	2.0										
COLORADO																
ESTIMATED POPULATION	1,096	825	281	194	30	16										
% STANDARD ERROR	19.3	22.4	37.9	44.0	64.6	115.5										
% WITH CAPABILITY	21.1	15.9	5.4	3.7	0.6	0.3										
COLORADO																
ESTIMATED POPULATION	1,096	825	281	194	30	16										
% STANDARD ERROR	19.3	22.4	37.9	44.0	64.6	115.5										
% WITH CAPABILITY	21.1	15.9	5.4	3.7	0.6	0.3										
CONNECTICUT																
ESTIMATED POPULATION	1,001	993	46	5	20	7										
% STANDARD ERROR	20.0	20.1	76.0	170.2	70.3	112.6										
% WITH CAPABILITY	43.8	43.4	2.0	0.2	0.9	0.3										
DELAWARE																
ESTIMATED POPULATION	710	544	184	31	56	13										
% STANDARD ERROR	22.3	25.1	44.3	51.2	59.5	55.0										
% WITH CAPABILITY	45.0	34.5	11.7	2.0	3.5	0.8										

7.12 1989 GENERAL AVIATION AIRCRAFT WITH NAVIGATION EQUIPMENT  
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STATE	BASIC NAVIGATION EQUIPMENT							
	VOR 100CH PORT	VOR 100CH FXD	VOR 200CH PORT	VOR 200CH FXD	1+ VOR	ADF	DME	RNAV
D.C.								
ESTIMATED POPULATION	1	8	3	33	4	31	25	12
% STANDARD ERROR	287.3	236.8	286.7	92.8	277.2	92.0	96.1	125.6
% WITH CAPABILITY	4.0	21.1	6.8	86.9	10.9	83.4	65.6	32.5
FLORIDA								
ESTIMATED POPULATION	112	4,451	928	8,544	1,658	8,795	5,973	2,040
% STANDARD ERROR	55.6	9.3	20.1	6.6	14.7	6.4	7.5	12.7
% WITH CAPABILITY	0.7	29.3	6.1	56.2	10.9	57.8	39.3	13.4
GEORGIA								
ESTIMATED POPULATION	64	1,897	247	2,861	518	3,052	2,182	797
% STANDARD ERROR	76.5	14.7	36.3	11.3	28.0	11.0	12.8	19.5
% WITH CAPABILITY	1.1	31.2	4.1	47.0	8.5	50.2	35.9	13.1
HAWAII								
ESTIMATED POPULATION	9	139	39	239	27	175	176	45
% STANDARD ERROR	252.7	50.2	110.2	41.3	120.1	45.6	43.6	84.7
% WITH CAPABILITY	1.9	28.9	8.2	49.7	5.7	36.5	36.7	9.5
IDAHO								
ESTIMATED POPULATION	1	964	41	1,021	215	947	594	146
% STANDARD ERROR	122.7	20.3	84.6	19.5	42.0	20.0	25.4	45.7
% WITH CAPABILITY	0.0	41.5	1.8	43.9	9.2	40.7	25.5	6.3
ILLINOIS								
ESTIMATED POPULATION	155	2,282	340	4,755	933	4,624	3,276	1,355
% STANDARD ERROR	60.5	13.4	34.1	9.2	21.2	9.1	10.7	16.1
% WITH CAPABILITY	1.9	27.8	4.1	57.9	11.4	56.3	39.9	16.5
INDIANA								
ESTIMATED POPULATION	112	986	195	2,576	423	2,606	1,775	632
% STANDARD ERROR	69.5	20.8	41.9	12.3	30.5	12.1	14.3	23.2
% WITH CAPABILITY	2.4	21.5	4.2	56.0	9.2	56.7	38.6	13.8
IOWA								
ESTIMATED POPULATION	24	822	203	1,363	304	1,246	997	477
% STANDARD ERROR	115.4	23.2	41.8	16.8	38.3	17.3	19.0	25.7
% WITH CAPABILITY	0.8	27.8	6.9	46.1	10.3	42.2	33.7	16.2

7.12 1989 GENERAL AVIATION AIRCRAFT WITH NAVIGATION EQUIPMENT  
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STATE	LONG RANGE NAVIGATION EQUIPMENT										OTHER NAVIGATION EQUIPMENT			
	LORAN C	VFR ONLY	NAV IFR	APP IFR	OMEGA	OTHER LRNAV	RADAR ALTIM	WEATHER RADAR	THUNDER STM DET	NO NAV EQ	RADAR	WEATHER RADAR	THUNDER STM DET	NO NAV EQ
D.C.	16	13	5	0	9	4	21	20	6	0				
ESTIMATED POPULATION	131.9	147.3	222.3	0.0	131.3	150.2	97.7	98.9	231.8	0.0				
% STANDARD ERROR	42.4	34.9	14.2	0.0	23.0	11.6	56.4	52.6	17.0	0.0				
% WITH CAPABILITY														
FLORIDA	5,964	5,470	775	250	117	216	1,249	2,081	1,038	2,511				
ESTIMATED POPULATION	7.7	8.1	20.3	32.3	42.1	28.2	14.0	11.6	18.9	12.3				
% STANDARD ERROR	39.2	36.0	5.1	1.6	0.8	1.4	8.2	13.7	6.8	16.5				
% WITH CAPABILITY														
GEORGIA	2,599	2,268	428	194	142	74	506	699	524	1,221				
ESTIMATED POPULATION	12.0	12.9	27.9	35.7	30.7	41.2	22.6	19.6	26.0	18.2				
% STANDARD ERROR	42.7	37.3	7.0	3.2	2.3	1.2	8.3	11.5	8.6	20.1				
% WITH CAPABILITY														
HAWAII	20	11	9	5	4	3	34	30	5	81				
ESTIMATED POPULATION	116.5	161.6	166.2	238.1	190.1	249.4	105.9	114.8	238.1	63.9				
% STANDARD ERROR	4.1	2.3	1.8	0.9	0.8	0.6	7.1	6.2	0.9	16.9				
% WITH CAPABILITY														
IDAHO	520	507	33	9	14	14	84	86	34	494				
ESTIMATED POPULATION	26.0	26.5	73.8	123.7	96.5	95.2	53.9	56.6	86.4	26.8				
% STANDARD ERROR	22.3	21.8	1.4	0.4	0.6	0.6	3.6	3.7	1.4	21.3				
% WITH CAPABILITY														
ILLINOIS	2,711	2,377	426	166	132	76	697	710	608	1,402				
ESTIMATED POPULATION	12.2	13.1	30.8	45.2	38.2	60.4	19.9	20.6	24.3	15.3				
% STANDARD ERROR	33.0	28.9	5.2	2.0	1.6	0.9	8.5	8.6	7.4	17.1				
% WITH CAPABILITY														
INDIANA	1,493	1,270	343	89	91	27	412	419	482	948				
ESTIMATED POPULATION	15.9	17.5	32.0	59.2	37.0	59.9	26.3	25.5	25.7	19.7				
% STANDARD ERROR	32.5	27.6	7.5	1.9	2.0	0.6	9.0	9.1	10.5	20.6				
% WITH CAPABILITY														
IOWA	649	514	204	74	30	17	250	312	203	795				
ESTIMATED POPULATION	23.8	27.1	43.0	66.2	89.0	106.1	31.1	29.8	42.1	21.8				
% STANDARD ERROR	22.0	17.4	6.9	2.5	1.0	0.6	8.5	10.6	6.9	26.9				
% WITH CAPABILITY														

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STATE	BASIC NAVIGATION EQUIPMENT							
	VOR 100CH PORT	VOR 100CH FXD	VOR 200CH PORT	VOR 200CH FXD	1+ VOR	ADF	DME	RNAV
KANSAS								
ESTIMATED POPULATION	108	993	118	1,847	383	2,127	1,314	594
% STANDARD ERROR	64.6	20.1	49.4	14.2	32.2	13.5	16.5	24.0
% WITH CAPABILITY	2.7	24.4	2.9	45.4	9.4	52.2	32.3	14.6
KENTUCKY								
ESTIMATED POPULATION	44	548	126	1,037	264	1,095	664	235
% STANDARD ERROR	94.3	27.9	55.1	20.1	40.5	19.0	23.9	36.1
% WITH CAPABILITY	2.4	29.3	6.8	55.5	14.2	58.7	35.5	12.6
LOUISIANA								
ESTIMATED POPULATION	0	821	110	1,408	116	1,453	820	334
% STANDARD ERROR	0.0	23.0	55.0	16.5	54.6	16.3	20.5	28.7
% WITH CAPABILITY	0.0	25.7	3.4	44.1	3.6	45.6	25.7	10.5
MAINE								
ESTIMATED POPULATION	83	517	94	753	132	670	451	193
% STANDARD ERROR	70.7	27.2	33.9	22.3	52.2	22.7	27.4	38.2
% WITH CAPABILITY	4.9	30.3	5.5	44.2	7.7	39.3	26.4	11.3
MARYLAND								
ESTIMATED POPULATION	59	1,089	203	1,737	478	1,870	1,100	466
% STANDARD ERROR	75.5	19.2	43.5	15.3	29.6	14.6	18.7	28.7
% WITH CAPABILITY	1.8	34.1	6.3	54.3	15.0	58.5	34.4	14.6
MASSACHUSETTS								
ESTIMATED POPULATION	28	816	465	2,046	509	1,945	1,103	499
% STANDARD ERROR	91.9	22.5	30.4	13.8	28.1	14.2	18.1	26.1
% WITH CAPABILITY	0.8	23.4	13.4	58.7	14.6	55.9	31.7	14.3
MICHIGAN								
ESTIMATED POPULATION	146	2,805	511	4,317	909	4,472	3,035	1,307
% STANDARD ERROR	49.1	11.8	28.9	9.4	21.0	9.0	10.5	15.2
% WITH CAPABILITY	1.6	30.6	5.6	47.1	9.9	48.8	33.1	14.3
MINNESOTA								
ESTIMATED POPULATION	137	2,197	150	1,900	317	2,105	1,340	541
% STANDARD ERROR	55.1	13.5	48.8	14.2	35.7	13.2	16.1	25.5
% WITH CAPABILITY	2.4	37.7	2.6	32.6	5.4	36.1	23.0	9.3

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LONG RANGE NAVIGATION EQUIPMENT

OTHER NAVIGATION EQUIPMENT

STATE	LONG RANGE NAVIGATION EQUIPMENT										OTHER NAVIGATION EQUIPMENT			
	LORAN C	VFR ONLY	NAV IFR	APP IFR	OMEGA	OTHER LRNAV	RADAR ALTIM	WEATHER RADAR	THUNDER STM DET	NO NAV EQ				
-----LORAN-----														
KANSAS	1,097	1,057	133	14	43	60	308	314	370	1,182				
ESTIMATED POPULATION	18.6	19.1	45.8	127.8	50.4	58.4	26.8	30.5	31.0	18.1				
% STANDARD ERROR	26.9	26.0	3.3	0.4	1.0	1.5	7.6	7.7	9.1	29.0				
% WITH CAPABILITY														
KENTUCKY	912	884	53	10	24	13	144	215	125	254				
ESTIMATED POPULATION	21.9	22.3	71.5	130.8	91.8	77.9	38.5	36.0	51.2	32.4				
% STANDARD ERROR	48.8	47.3	2.8	0.5	1.3	0.7	7.7	11.5	6.7	13.6				
% WITH CAPABILITY														
LOUISIANA	985	864	112	31	10	8	208	265	183	845				
ESTIMATED POPULATION	19.6	20.8	58.6	118.5	98.5	131.8	33.6	30.3	46.0	20.9				
% STANDARD ERROR	30.9	27.1	3.5	1.0	0.3	0.3	6.5	8.3	5.7	26.5				
% WITH CAPABILITY														
MAINE	719	689	38	14	0	3	93	163	25	306				
ESTIMATED POPULATION	23.3	24.0	78.1	125.0	0.0	195.7	43.9	37.5	115.4	33.6				
% STANDARD ERROR	42.1	40.4	2.2	0.8	0.0	0.2	5.5	9.6	1.5	18.0				
% WITH CAPABILITY														
MARYLAND	1,019	994	32	14	13	20	171	246	254	481				
ESTIMATED POPULATION	20.4	20.8	69.2	127.7	89.0	85.8	42.4	34.4	41.1	27.7				
% STANDARD ERROR	31.9	31.1	1.0	0.4	0.4	0.6	5.4	7.7	7.9	15.1				
% WITH CAPABILITY														
MASSACHUSETTS	1,412	1,283	111	115	28	51	145	236	401	514				
ESTIMATED POPULATION	16.9	17.9	51.0	54.4	58.1	67.7	36.1	33.8	30.9	24.9				
% STANDARD ERROR	40.5	36.8	3.2	3.3	0.8	1.5	4.2	6.8	11.5	14.8				
% WITH CAPABILITY														
MICHIGAN	3,159	2,688	785	216	147	79	807	923	826	1,911				
ESTIMATED POPULATION	11.1	12.4	20.4	33.3	25.8	42.1	16.7	16.1	20.4	13.7				
% STANDARD ERROR	34.5	29.3	8.6	2.4	1.6	0.9	8.8	10.1	9.0	20.8				
% WITH CAPABILITY														
MINNESOTA	1,303	1,260	137	48	40	30	253	244	210	1,497				
ESTIMATED POPULATION	16.8	17.3	43.3	63.7	51.2	55.8	33.7	30.6	40.7	15.2				
% STANDARD ERROR	22.4	21.6	2.4	0.8	0.7	0.5	4.3	4.2	3.6	25.7				
% WITH CAPABILITY														

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BASIC NAVIGATION EQUIPMENT

STATE	VOR 100CH PORT	VOR 100CH FXD	VOR 200CH PORT	VOR 200CH FXD	1+ VOR	ADF	DME	RNAV
MISSISSIPPI								
ESTIMATED POPULATION	3	652	76	1,048	181	1,174	765	322
% STANDARD ERROR	172.4	25.3	70.7	19.4	47.8	17.9	21.7	34.6
% WITH CAPABILITY	0.1	30.5	3.6	49.0	8.5	54.9	35.8	15.0
MISSOURI								
ESTIMATED POPULATION	77	1,981	260	1,857	283	2,245	1,388	749
% STANDARD ERROR	80.3	15.0	38.7	14.4	39.7	13.0	15.8	22.5
% WITH CAPABILITY	1.5	40.1	5.3	37.6	5.7	45.4	28.1	15.2
MONTANA								
ESTIMATED POPULATION	21	791	131	741	163	866	422	193
% STANDARD ERROR	96.6	22.4	57.4	22.1	48.6	20.7	29.0	42.5
% WITH CAPABILITY	0.9	34.8	5.8	32.6	7.2	38.1	18.6	8.5
NEBRASKA								
ESTIMATED POPULATION	0	459	12	746	50	697	480	257
% STANDARD ERROR	0.0	29.8	127.3	22.0	85.3	23.0	26.1	34.9
% WITH CAPABILITY	0.0	23.4	0.6	38.0	2.5	35.4	24.4	13.1
NEVADA								
ESTIMATED POPULATION	92	966	182	1,108	256	1,236	1,015	325
% STANDARD ERROR	64.1	20.8	46.5	18.7	37.4	18.2	20.0	35.9
% WITH CAPABILITY	3.6	37.8	7.1	43.4	10.0	48.4	39.7	12.7
NEW HAMPSHIRE								
ESTIMATED POPULATION	3	716	33	698	118	951	621	199
% STANDARD ERROR	127.5	24.4	88.8	22.6	55.5	20.1	25.1	41.8
% WITH CAPABILITY	0.2	44.1	2.0	43.0	7.3	58.6	38.3	12.3
NEW JERSEY								
ESTIMATED POPULATION	58	1,283	275	2,498	573	2,503	1,625	661
% STANDARD ERROR	67.6	18.2	39.9	12.5	27.4	12.4	15.0	23.3
% WITH CAPABILITY	1.3	29.7	6.4	57.8	13.2	57.9	37.6	15.3
NEW MEXICO								
ESTIMATED POPULATION	82	992	65	1,021	209	1,238	1,193	442
% STANDARD ERROR	84.7	20.7	74.6	19.3	43.8	17.5	18.0	29.7
% WITH CAPABILITY	3.1	37.3	2.4	38.4	7.9	46.5	44.8	16.6

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LONG RANGE NAVIGATION EQUIPMENT

STATE	LONG RANGE NAVIGATION EQUIPMENT						OTHER		NAVIGATION		EQUIPMENT	
	LORAN C	VFR ONLY	NAV IFR	APP IFR	OMEGA	OTHER LRNAV	RADAR ALTIM	WEATHER RADAR	THUNDER STM DET	NO NAV EQ		
MISSISSIPPI												
ESTIMATED POPULATION	760	666	191	97	21	32	123	209	113	420		
% STANDARD ERROR	22.1	24.2	42.6	66.2	76.0	86.2	45.9	37.4	56.6	28.0		
% WITH CAPABILITY	36.0	31.2	8.9	4.6	1.0	1.5	5.8	9.8	5.3	19.6		
MISSOURI												
ESTIMATED POPULATION	1,413	1,239	205	142	62	50	317	229	424	944		
% STANDARD ERROR	16.9	18.0	45.3	57.5	39.8	55.7	23.8	26.9	30.3	19.4		
% WITH CAPABILITY	28.6	25.1	4.2	2.9	1.3	1.0	6.4	4.6	8.6	19.1		
MONTANA												
ESTIMATED POPULATION	399	392	10	4	18	15	92	97	33	665		
% STANDARD ERROR	30.2	30.6	161.4	270.0	83.6	92.5	51.0	51.0	74.3	22.8		
% WITH CAPABILITY	17.6	17.2	0.5	0.2	0.8	0.7	4.1	4.2	1.4	29.2		
NEBRASKA												
ESTIMATED POPULATION	299	272	55	19	18	12	136	145	104	728		
% STANDARD ERROR	34.2	36.8	52.4	92.1	67.2	80.8	39.1	38.0	61.4	23.4		
% WITH CAPABILITY	15.2	13.8	2.8	1.0	0.9	0.6	6.9	7.4	5.3	37.0		
NEVADA												
ESTIMATED POPULATION	1,081	894	253	213	23	41	267	102	94	409		
% STANDARD ERROR	19.4	21.3	41.6	46.1	87.5	93.5	36.6	45.5	64.3	27.9		
% WITH CAPABILITY	42.4	35.0	9.9	8.3	0.9	1.6	10.4	4.0	3.7	16.0		
NEW HAMPSHIRE												
ESTIMATED POPULATION	578	510	72	11	9	1	124	168	119	255		
% STANDARD ERROR	24.7	26.3	68.9	139.4	141.4	793.4	45.9	41.5	57.6	34.7		
% WITH CAPABILITY	35.6	31.4	4.5	0.7	0.6	0.1	7.6	10.4	7.3	15.7		
NEW JERSEY												
ESTIMATED POPULATION	1,895	1,740	332	132	84	76	344	271	326	618		
% STANDARD ERROR	14.2	15.0	34.6	49.5	39.8	42.0	27.9	31.0	33.1	22.0		
% WITH CAPABILITY	43.8	40.3	7.7	3.1	1.9	1.8	8.0	6.3	7.5	14.3		
NEW MEXICO												
ESTIMATED POPULATION	306	282	35	20	6	10	227	196	178	624		
% STANDARD ERROR	31.5	32.8	85.1	132.9	185.5	82.0	38.9	38.8	45.2	19.8		
% WITH CAPABILITY	11.5	10.6	1.3	0.8	0.2	0.4	8.5	7.4	6.7	23.5		



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BASIC NAVIGATION EQUIPMENT

STATE	VOR 100CH PORT	VOR 100CH FXD	VOR 200CH PORT	VOR 200CH FXD	1+ VOR	ADF	DME	RNAV
<b>NEW YORK</b>								
ESTIMATED POPULATION	100	2,392	448	3,697	847	3,792	2,456	1,024
% STANDARD ERROR	65.8	13.1	31.2	10.2	22.7	10.0	12.0	17.9
% WITH CAPABILITY	1.3	31.5	5.9	48.7	11.2	50.0	32.4	13.5
<b>NORTH CAROLINA</b>								
ESTIMATED POPULATION	3	1,946	170	2,604	310	3,197	2,304	1,019
% STANDARD ERROR	383.1	14.7	46.6	11.5	34.8	10.6	12.2	17.2
% WITH CAPABILITY	0.1	34.7	3.0	46.5	5.5	57.1	41.1	18.2
<b>NORTH DAKOTA</b>								
ESTIMATED POPULATION	3	641	15	673	34	544	344	126
% STANDARD ERROR	321.5	25.2	119.1	25.6	86.8	27.0	33.3	53.9
% WITH CAPABILITY	0.2	34.9	0.8	36.7	1.8	29.6	18.7	6.9
<b>OHIO</b>								
ESTIMATED POPULATION	135	2,482	642	4,919	1,059	4,803	3,182	1,307
% STANDARD ERROR	50.4	12.6	25.5	8.8	19.3	8.8	10.4	15.1
% WITH CAPABILITY	1.5	27.1	7.0	53.8	11.6	52.5	34.8	14.3
<b>OKLAHOMA</b>								
ESTIMATED POPULATION	30	1,546	114	2,315	367	2,377	1,515	697
% STANDARD ERROR	67.7	16.7	56.0	13.0	31.1	12.8	15.4	22.2
% WITH CAPABILITY	0.7	34.5	2.5	51.7	8.2	53.0	33.8	15.6
<b>OREGON</b>								
ESTIMATED POPULATION	142	1,491	448	2,370	523	2,526	1,607	468
% STANDARD ERROR	51.3	16.0	30.6	12.6	27.6	12.0	14.7	27.2
% WITH CAPABILITY	2.7	28.1	8.4	44.6	9.8	47.5	30.3	8.8
<b>PENNSYLVANIA</b>								
ESTIMATED POPULATION	39	2,190	553	3,408	871	3,774	2,532	696
% STANDARD ERROR	59.0	13.8	27.3	10.6	21.6	10.0	11.9	21.6
% WITH CAPABILITY	0.6	32.2	8.1	50.1	12.8	55.5	37.2	10.2
<b>RHODE ISLAND</b>								
ESTIMATED POPULATION	5	198	50	228	49	335	231	22
% STANDARD ERROR	307.9	47.3	90.4	43.3	96.8	36.2	43.3	119.6
% WITH CAPABILITY	1.0	39.8	10.0	45.8	9.8	67.5	46.6	4.5

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LONG RANGE NAVIGATION EQUIPMENT

STATE	LONG RANGE NAVIGATION EQUIPMENT										OTHER				NAVIGATION EQUIPMENT			
	LORAN C	VFR ONLY	NAV IFR	APP IFR	OMEGA	OTHER LNAV	RADAR ALTIM	WEATHER RADAR	THUNDER STM DET	NO NAV EQ	RADAR	WEATHER RADAR	THUNDER STM DET	NO NAV EQ	RADAR	WEATHER RADAR	THUNDER STM DET	NO NAV EQ
<b>NEW YORK</b>																		
ESTIMATED POPULATION	2,344	2,065	264	167	123	164	628	712	516	1,672	628	712	516	1,672	628	712	516	1,672
% STANDARD ERROR	12.8	14.0	33.4	38.2	34.0	28.9	19.9	19.5	26.7	13.7	19.9	19.5	26.7	13.7	19.9	19.5	26.7	13.7
% WITH CAPABILITY	30.9	27.2	3.5	2.2	1.6	2.2	8.3	9.4	6.8	22.0	8.3	9.4	6.8	22.0	8.3	9.4	6.8	22.0
<b>NORTH CAROLINA</b>																		
ESTIMATED POPULATION	2,590	2,295	463	160	75	126	620	905	537	977	620	905	537	977	620	905	537	977
% STANDARD ERROR	11.9	12.8	25.4	48.7	42.0	49.7	19.6	16.9	24.6	18.2	19.6	16.9	24.6	18.2	19.6	16.9	24.6	18.2
% WITH CAPABILITY	46.2	41.0	8.3	2.9	1.3	2.3	11.1	16.1	9.6	17.4	11.1	16.1	9.6	17.4	11.1	16.1	9.6	17.4
<b>NORTH DAKOTA</b>																		
ESTIMATED POPULATION	100	99	1	1	3	0	34	39	18	512	34	39	18	512	34	39	18	512
% STANDARD ERROR	57.2	57.7	435.3	435.3	200.9	0.0	94.8	80.9	103.2	24.9	94.8	80.9	103.2	24.9	94.8	80.9	103.2	24.9
% WITH CAPABILITY	5.4	5.4	0.1	0.1	0.2	0.0	1.9	2.1	1.0	27.9	1.9	2.1	1.0	27.9	1.9	2.1	1.0	27.9
<b>OHIO</b>																		
ESTIMATED POPULATION	3,499	2,946	780	278	191	58	771	1,040	663	1,762	771	1,040	663	1,762	771	1,040	663	1,762
% STANDARD ERROR	10.4	11.6	20.3	34.4	25.4	41.1	16.3	15.7	22.8	14.3	16.3	15.7	22.8	14.3	16.3	15.7	22.8	14.3
% WITH CAPABILITY	38.3	32.2	8.5	3.0	2.1	0.6	8.4	11.4	7.2	19.3	8.4	11.4	7.2	19.3	8.4	11.4	7.2	19.3
<b>OKLAHOMA</b>																		
ESTIMATED POPULATION	1,201	1,081	247	145	44	23	331	424	303	796	331	424	303	796	331	424	303	796
% STANDARD ERROR	17.9	19.1	36.8	49.0	47.7	71.3	30.5	26.9	32.5	21.6	30.5	26.9	32.5	21.6	30.5	26.9	32.5	21.6
% WITH CAPABILITY	26.8	24.1	5.5	3.2	1.0	0.5	7.4	9.5	6.8	17.8	7.4	9.5	6.8	17.8	7.4	9.5	6.8	17.8
<b>OREGON</b>																		
ESTIMATED POPULATION	2,189	2,039	110	75	41	58	304	277	67	1,144	304	277	67	1,144	304	277	67	1,144
% STANDARD ERROR	13.4	14.1	50.3	42.5	59.7	51.6	28.6	28.7	56.2	17.6	28.6	28.7	56.2	17.6	28.6	28.7	56.2	17.6
% WITH CAPABILITY	41.2	38.4	2.1	1.4	0.8	1.1	5.7	5.2	1.3	21.5	5.7	5.2	1.3	21.5	5.7	5.2	1.3	21.5
<b>PENNSYLVANIA</b>																		
ESTIMATED POPULATION	2,209	1,912	406	348	52	200	517	479	518	1,381	517	479	518	1,381	517	479	518	1,381
% STANDARD ERROR	13.2	14.6	26.1	28.5	41.2	41.3	23.0	22.1	25.5	15.1	23.0	22.1	25.5	15.1	23.0	22.1	25.5	15.1
% WITH CAPABILITY	32.5	28.1	6.0	5.1	0.8	2.9	7.6	7.0	7.6	20.3	7.6	7.0	7.6	20.3	7.6	7.0	7.6	20.3
<b>RHODE ISLAND</b>																		
ESTIMATED POPULATION	192	184	8	6	2	0	15	24	12	59	15	24	12	59	15	24	12	59
% STANDARD ERROR	47.7	48.9	205.0	255.0	435.0	0.0	130.2	111.5	149.9	78.9	130.2	111.5	149.9	78.9	130.2	111.5	149.9	78.9
% WITH CAPABILITY	38.7	37.0	1.7	1.2	0.3	0.0	3.1	4.9	2.4	11.9	3.1	4.9	2.4	11.9	3.1	4.9	2.4	11.9

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BASIC NAVIGATION EQUIPMENT

STATE	VOR 100CH PORT	VOR 100CH FXD	VOR 200CH PORT	VOR 200CH FXD	1+ VOR	ADF	DME	RNAV
<b>SOUTH CAROLINA</b>								
ESTIMATED POPULATION	40	475	191	1,339	222	1,165	817	312
% STANDARD ERROR	107.6	29.4	45.9	17.1	43.9	17.9	20.8	31.1
% WITH CAPABILITY	1.8	21.3	8.6	60.1	9.9	52.3	36.7	14.0
<b>SOUTH DAKOTA</b>								
ESTIMATED POPULATION	42	669	16	387	32	450	330	157
% STANDARD ERROR	95.9	25.6	126.3	32.4	109.4	30.0	34.8	49.0
% WITH CAPABILITY	2.8	44.9	1.1	26.0	2.1	30.2	22.1	10.5
<b>TENNESSEE</b>								
ESTIMATED POPULATION	3	1,091	251	2,327	470	2,187	1,365	674
% STANDARD ERROR	181.2	19.7	43.3	12.7	30.0	12.8	15.0	18.9
% WITH CAPABILITY	0.1	30.0	6.9	64.0	12.9	60.1	37.5	18.5
<b>TEXAS</b>								
ESTIMATED POPULATION	145	5,803	1,167	10,228	2,095	10,941	7,719	2,748
% STANDARD ERROR	47.7	8.3	17.1	6.0	13.0	5.7	6.6	10.8
% WITH CAPABILITY	0.7	28.8	5.8	50.7	10.4	54.3	38.3	13.6
<b>UTAH</b>								
ESTIMATED POPULATION	85	563	83	762	219	812	526	240
% STANDARD ERROR	82.1	28.1	73.2	22.6	44.1	22.0	26.5	39.7
% WITH CAPABILITY	5.5	36.3	5.4	49.1	14.1	52.3	33.9	15.5
<b>VERMONT</b>								
ESTIMATED POPULATION	33	203	35	272	38	280	183	65
% STANDARD ERROR	115.4	44.5	110.8	36.1	105.6	35.9	44.2	76.4
% WITH CAPABILITY	5.2	32.7	5.7	43.8	6.1	45.1	29.5	10.5
<b>VIRGINIA</b>								
ESTIMATED POPULATION	65	1,043	265	1,961	508	2,019	1,352	323
% STANDARD ERROR	76.8	18.7	40.2	14.1	28.2	13.6	15.9	31.1
% WITH CAPABILITY	1.7	27.6	7.0	51.9	13.4	53.5	35.8	8.6
<b>WASHINGTON</b>								
ESTIMATED POPULATION	109	2,712	364	3,413	523	3,266	1,582	355
% STANDARD ERROR	69.9	12.0	34.6	10.8	28.5	10.8	14.9	30.2
% WITH CAPABILITY	1.4	35.0	4.7	44.0	6.7	42.1	20.4	4.6

7.12 1989 GENERAL AVIATION AIRCRAFT WITH NAVIGATION EQUIPMENT  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

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LONG RANGE NAVIGATION EQUIPMENT

STATE	LONG RANGE NAVIGATION EQUIPMENT										OTHER NAVIGATION EQUIPMENT			
	LORAN C	VFR ONLY	NAV IFR	APP IFR	OMEGA	IRNAV	RADAR ALTIM	WEATHER RADAR	THUNDER STM DET	NO NAV EQ	RADAR ALTIM	WEATHER RADAR	THUNDER STM DET	NO NAV EQ
SOUTH CAROLINA ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	602	505	95	17	7	22	156	196	213	375				
	23.7	26.0	58.2	102.5	122.8	112.7	40.3	36.9	39.8	30.7				
	27.0	22.7	4.3	0.8	0.3	1.0	7.0	8.8	9.6	16.8				
SOUTH DAKOTA ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	255	255	63	0	5	1	63	72	86	398				
	40.7	40.7	84.1	0.0	165.7	284.6	71.3	69.5	67.6	26.3				
	17.1	17.1	4.2	0.0	0.4	0.1	4.3	4.8	5.7	26.7				
TENNESSEE ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	1,282	1,129	181	129	87	107	473	668	258	395				
	16.6	18.1	37.7	42.3	48.6	45.5	21.7	19.0	36.0	25.5				
	35.2	31.0	5.0	3.5	2.4	2.9	13.0	18.4	7.1	10.9				
TEXAS ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	6,002	5,415	1,036	423	383	149	1,656	2,436	1,438	4,137				
	7.9	8.4	18.2	30.5	25.6	40.6	12.3	10.4	16.0	9.1				
	29.8	26.8	5.1	2.1	1.9	0.7	8.2	12.1	7.1	20.5				
UTAH ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	490	422	158	13	7	12	71	131	133	193				
	29.0	31.5	52.4	134.8	153.4	115.6	54.9	47.9	57.7	42.8				
	31.6	27.2	10.2	0.8	0.5	0.8	4.6	8.4	8.6	12.5				
VERMONT ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	159	157	2	0	0	3	16	43	23	94				
	46.5	46.9	270.7	0.0	0.0	341.9	129.8	82.8	121.5	49.5				
	25.6	25.3	0.3	0.0	0.0	0.4	2.5	6.9	3.6	15.1				
VIRGINIA ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	1,360	1,215	242	103	155	54	492	463	333	772				
	17.4	18.6	39.0	56.2	32.5	51.5	24.3	23.0	33.5	21.0				
	36.0	32.2	6.4	2.7	4.1	1.4	13.0	12.3	8.8	20.4				
WASHINGTON ESTIMATED POPULATION % STANDARD ERROR % WITH CAPABILITY	2,099	1,895	208	38	30	31	139	185	64	1,515				
	13.3	14.0	41.8	78.2	69.0	104.6	34.2	30.5	55.3	14.2				
	27.1	24.4	2.7	0.5	0.4	0.4	1.8	2.4	0.8	19.5				

7.12 1989 GENERAL AVIATION AIRCRAFT WITH NAVIGATION EQUIPMENT  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

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STATE	BASIC NAVIGATION EQUIPMENT							
	VOR 100CH PORT	VOR 100CH FXD	VOR 200CH PORT	VOR 200CH FXD	1+ VOR	ADF	DME	RNAV
WEST VIRGINIA								
ESTIMATED POPULATION	3	211	20	485	53	497	233	138
* STANDARD ERROR	373.8	44.2	130.2	28.5	87.8	28.4	38.1	52.5
* WITH CAPABILITY	0.3	19.7	1.9	45.2	4.9	46.4	21.8	12.9
WISCONSIN								
ESTIMATED POPULATION	228	1,559	424	2,457	601	2,313	1,371	801
* STANDARD ERROR	45.0	16.5	29.6	12.8	27.0	13.1	16.2	22.2
* WITH CAPABILITY	4.3	29.3	8.0	46.2	11.3	43.5	25.8	15.1
WYOMING								
ESTIMATED POPULATION	0	322	6	521	50	515	377	163
* STANDARD ERROR	0.0	33.0	158.8	26.7	89.5	27.5	31.6	46.4
* WITH CAPABILITY	0.0	33.6	0.7	54.3	5.2	53.7	39.3	17.0
PUERTO RICO								
ESTIMATED POPULATION	12	157	18	145	24	267	151	25
* STANDARD ERROR	187.5	47.8	142.5	51.1	129.3	36.0	48.6	106.9
* WITH CAPABILITY	3.5	45.4	5.2	42.0	6.8	77.2	43.7	7.3
OTHER U.S. TERRITORIES								
ESTIMATED POPULATION	1	26	4	61	10	83	58	16
* STANDARD ERROR	409.9	131.0	340.1	72.1	219.1	62.4	72.1	153.9
* WITH CAPABILITY	1.1	28.7	4.7	66.3	10.5	90.0	62.7	17.2
TOTAL								
ESTIMATED POPULATION	3,858	78,890	13,628	125,458	24,850	129,474	86,629	32,245
* STANDARD ERROR	10.2	1.7	5.2	1.1	3.7	0.8	1.2	2.6
* WITH CAPABILITY	1.5	30.7	5.3	48.9	9.7	50.4	33.7	12.6

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

7.12 1989 GENERAL AVIATION AIRCRAFT WITH NAVIGATION EQUIPMENT  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

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STATE	LONG RANGE NAVIGATION EQUIPMENT										OTHER			NAVIGATION			EQUIPMENT	
	LORAN C	VFR ONLY	NAV IFR	APP IFR	OMEGA	OTHER LRNAV	RADAR ALTIM	WEATHER RADAR	THUNDER STM DET	NO NAV EQ	RADAR ALTIM	WEATHER RADAR	THUNDER STM DET	NO NAV EQ	RADAR ALTIM	WEATHER RADAR	THUNDER STM DET	NO NAV EQ
WEST VIRGINIA	340	335	5	4	2	10	43	70	114	295								
ESTIMATED POPULATION	34.3	34.7	253.8	210.9	196.0	176.8	74.5	70.7	60.4	40.1								
STANDARD ERROR	31.7	31.2	0.5	0.4	0.2	0.9	4.0	6.6	10.7	27.6								
WITH CAPABILITY																		
WISCONSIN	1,758	1,630	146	81	29	21	454	507	222	1,080								
ESTIMATED POPULATION	14.9	15.6	46.2	56.9	76.4	93.2	27.1	24.8	39.9	18.3								
STANDARD ERROR	33.1	30.6	2.7	1.5	0.6	0.4	8.5	9.5	4.2	20.3								
WITH CAPABILITY																		
WYOMING	247	235	13	9	0	15	84	37	29	161								
ESTIMATED POPULATION	38.5	40.0	111.0	127.4	0.0	127.9	55.8	68.6	94.7	45.7								
STANDARD ERROR	25.7	24.5	1.4	0.9	0.0	1.5	8.7	3.9	3.0	16.8								
WITH CAPABILITY																		
PUERTO RICO	55	12	44	34	3	7	42	40	8	31								
ESTIMATED POPULATION	87.7	168.0	101.5	123.9	237.6	346.0	92.4	94.8	186.0	131.7								
STANDARD ERROR	16.0	3.3	12.6	9.7	0.8	1.9	12.2	11.5	2.3	8.8								
WITH CAPABILITY																		
OTHER U.S. TERRITORIES	30	30	0	0	0	0	7	9	3	6								
ESTIMATED POPULATION	117.4	117.4	0.0	0.0	0.0	0.0	174.1	151.1	159.3	279.6								
STANDARD ERROR	32.7	32.7	0.0	0.0	0.0	0.0	8.1	9.8	9.3	6.7								
WITH CAPABILITY																		
TOTAL	80,103	71,598	12,287	5,430	3,074	3,044	18,246	21,360	15,067	51,405								
ESTIMATED POPULATION	1.7	1.9	5.1	7.5	6.2	8.2	2.8	2.3	4.4	1.7								
STANDARD ERROR	31.2	27.9	4.8	2.1	1.2	1.2	7.1	8.3	5.9	20.0								
WITH CAPABILITY																		

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

7.13 1989 GENERAL AVIATION AIRCRAFT WITH GUIDANCE AND CONTROL EQUIPMENT  
BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 3

AIRCRAFT TYPE	FLIGHT DIRECT	EFIS	FL MGT COMETR	GUIDANCE AND CONTROL EQUIPMENT			AUTO LAND	FL DATA REC'D	NO GCE
				-----AUTOPILOT-AXIS CONTROLS----- LONGITUDE	VERTICAL	LATERAL APP MODE			
FIXED WING									
FIXED WING - PISTON									
1 ENG: 1-3 SEATS									
ESTIMATED POPULATION	275	17	25	1,152	523	896	313	97	86,141
% STANDARD ERROR	43.7	57.5	56.3	20.4	32.5	24.3	41.4	80.5	0.3
% WITH CAPABILITY	0.3	0.0	0.0	1.3	0.6	1.0	0.4	0.1	98.1
1 ENG: 4+ SEATS									
ESTIMATED POPULATION	6,377	750	939	15,751	21,211	33,362	20,592	334	67,715
% STANDARD ERROR	6.8	22.9	20.3	2.0	3.3	2.6	3.6	34.5	1.3
% WITH CAPABILITY	5.3	0.6	0.8	38.0	17.6	27.7	17.1	0.3	56.3
1 ENGINE: TOTAL									
ESTIMATED POPULATION	6,652	768	964	46,903	21,733	34,258	20,905	431	153,857
% STANDARD ERROR	6.8	22.4	19.8	2.0	3.3	2.6	3.6	32.3	0.6
% WITH CAPABILITY	3.2	0.4	0.5	22.5	10.4	16.5	10.0	0.2	73.9
2 ENG: 1-6 SEATS									
ESTIMATED POPULATION	5,714	260	573	13,803	12,464	12,658	9,534	33	3,429
% STANDARD ERROR	5.3	36.6	24.3	2.2	2.7	2.7	3.7	100.8	8.4
% WITH CAPABILITY	32.0	1.5	3.2	77.4	69.9	71.0	53.4	0.2	19.2
2 ENG: 7+ SEATS									
ESTIMATED POPULATION	3,464	285	504	6,244	6,166	5,816	5,269	157	2,186
% STANDARD ERROR	5.9	34.5	25.3	2.3	2.2	3.0	3.6	47.5	5.6
% WITH CAPABILITY	39.9	3.3	5.8	71.9	71.0	66.9	60.6	1.8	25.2
2 ENGINE: TOTAL									
ESTIMATED POPULATION	9,177	545	1,077	20,047	18,629	18,473	14,803	191	5,615
% STANDARD ERROR	4.0	25.1	17.5	1.7	1.9	2.1	2.7	43.0	5.5
% WITH CAPABILITY	34.6	2.1	4.1	75.6	70.2	69.6	55.8	0.7	21.2
PISTON: OTHER									
ESTIMATED POPULATION	0	0	0	58	58	58	0	0	136
% STANDARD ERROR	0.0	0.0	0.0	68.3	68.3	68.3	0.0	0.0	29.4
% WITH CAPABILITY	0.0	0.0	0.0	30.1	30.1	30.1	0.0	0.0	69.9
PISTON: TOTAL									
ESTIMATED POPULATION	15,829	1,313	2,041	67,009	40,421	52,790	35,708	622	159,607
% STANDARD ERROR	3.7	16.8	13.2	1.5	2.0	1.8	2.4	26.0	0.6
% WITH CAPABILITY	6.7	0.6	0.9	28.5	17.2	22.5	15.2	0.3	68.0

7.13 1989 GENERAL AVIATION AIRCRAFT WITH GUIDANCE AND CONTROL EQUIPMENT  
BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 3

AIRCRAFT TYPE	GUIDANCE AND CONTROL EQUIPMENT									
	FLIGHT DIRECT	EFIS	FL MGT COMETR	----- LONGITUDE	----- VERTICAL	----- LATERAL	----- APP MODE	AUTO LAND	FL DATA RECORDER	NO GCE
FIXED WING - TURBOPROP										
2 ENG: 1-12 SEATS										
ESTIMATED POPULATION	4,352	411	379	4,734	4,757	4,739	4,292	29	35	280
% STANDARD ERROR	2.6	23.5	23.2	1.7	1.7	1.8	2.8	68.4	75.0	27.5
% WITH CAPABILITY	85.6	8.1	7.4	93.2	93.6	93.2	84.5	0.6	0.7	5.5
2 ENG: 13+ SEATS										
ESTIMATED POPULATION	796	196	193	727	724	709	640	154	248	544
% STANDARD ERROR	11.0	23.5	23.9	12.1	12.1	12.6	13.7	52.3	34.4	15.9
% WITH CAPABILITY	55.2	13.6	13.4	50.4	50.2	49.2	44.4	10.7	17.2	37.7
2 ENGINE: TOTAL										
ESTIMATED POPULATION	5,148	607	572	5,461	5,481	5,448	4,932	183	284	823
% STANDARD ERROR	2.8	17.6	17.4	2.2	2.2	2.2	3.0	45.3	31.5	14.1
% WITH CAPABILITY	78.9	9.3	8.8	83.7	84.0	83.5	75.6	2.8	4.4	12.6
TURBOPROP: OTHER										
ESTIMATED POPULATION	57	20	11	93	66	85	52	0	2	220
% STANDARD ERROR	48.1	112.2	155.1	32.6	49.7	38.0	38.5	0.0	399.0	14.6
% WITH CAPABILITY	17.6	6.1	3.2	28.5	20.1	26.0	15.9	0.0	0.6	67.6
TURBOPROP: TOTAL										
ESTIMATED POPULATION	5,205	627	583	5,553	5,547	5,533	4,984	183	286	1,044
% STANDARD ERROR	2.8	17.5	17.3	2.2	2.2	2.3	3.0	45.3	31.4	11.5
% WITH CAPABILITY	76.0	9.1	8.5	81.1	81.0	80.8	72.8	2.7	4.2	15.2
FIXED WING - TURBOJET										
2 ENGINE TURBOJET										
ESTIMATED POPULATION	3,978	849	1,026	3,997	3,964	3,937	3,892	88	224	92
% STANDARD ERROR	1.4	10.1	9.0	1.4	1.5	1.6	1.7	31.4	21.9	39.9
% WITH CAPABILITY	94.5	20.2	24.4	95.0	94.2	93.5	92.5	2.1	5.3	2.2
TURBOJET: OTHER										
ESTIMATED POPULATION	342	87	84	329	333	339	311	36	60	173
% STANDARD ERROR	10.1	31.6	29.8	10.5	10.0	9.9	10.3	27.3	34.1	19.5
% WITH CAPABILITY	64.9	16.6	16.0	62.4	63.2	64.3	59.1	6.8	11.5	32.8
TURBOJET: TOTAL										
ESTIMATED POPULATION	4,320	936	1,111	4,325	4,297	4,276	4,204	124	285	265
% STANDARD ERROR	1.5	9.6	8.6	1.5	1.6	1.6	1.7	23.7	18.7	18.8
% WITH CAPABILITY	91.2	19.8	23.4	91.3	90.7	90.3	88.8	2.6	6.0	5.6



7.13 1989 GENERAL AVIATION AIRCRAFT WITH GUIDANCE AND CONTROL EQUIPMENT  
BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

PAGE 3 OF 3

AIRCRAFT TYPE	GUIDANCE AND CONTROL EQUIPMENT										FL DATA REC'D	NO GCE
	FLIGHT DIRECT	EFIS	FL MGT COMPT	LONGITUDE	AUTOPILOT-AXIS CONTROLS	VERTICAL	LATERAL	APP	MODE	AUTO LAND		
FIXED WING: TOTAL	25,354	2,875	3,734	76,888	50,265	62,598	44,896			929	677	160,915
ESTIMATED POPULATION	2.4	9.1	8.1	1.3	1.6	1.6	1.9			19.8	18.4	0.6
STANDARD ERROR	10.3	1.2	1.5	31.2	20.4	25.4	18.2			0.4	0.3	65.3
WITH CAPABILITY												
ROTORCRAFT												
PISTON												
ESTIMATED POPULATION	N/A	N/A	N/A	N/A	N/A	N/A	N/A			N/A	N/A	N/A
STANDARD ERROR	N/A	N/A	N/A	N/A	N/A	N/A	N/A			N/A	N/A	N/A
WITH CAPABILITY	N/A	N/A	N/A	N/A	N/A	N/A	N/A			N/A	N/A	N/A
TURBINE												
ESTIMATED POPULATION	N/A	N/A	N/A	N/A	N/A	N/A	N/A			N/A	N/A	N/A
STANDARD ERROR	N/A	N/A	N/A	N/A	N/A	N/A	N/A			N/A	N/A	N/A
WITH CAPABILITY	N/A	N/A	N/A	N/A	N/A	N/A	N/A			N/A	N/A	N/A
ROTORCRAFT: TOTAL												
ESTIMATED POPULATION	N/A	N/A	N/A	N/A	N/A	N/A	N/A			N/A	N/A	N/A
STANDARD ERROR	N/A	N/A	N/A	N/A	N/A	N/A	N/A			N/A	N/A	N/A
WITH CAPABILITY	N/A	N/A	N/A	N/A	N/A	N/A	N/A			N/A	N/A	N/A
OTHER												
ESTIMATED POPULATION	14	4	12	10	21	6	2			8	8	10,245
STANDARD ERROR	77.1	211.8	135.4	141.3	101.2	192.2	87.1			84.1	84.0	0.3
WITH CAPABILITY	0.1	0.0	0.1	0.1	0.2	0.1	0.0			0.1	0.1	99.4
TOTAL												
ESTIMATED POPULATION	25,368	2,879	3,746	76,898	50,286	62,604	44,898			937	685	171,160
STANDARD ERROR	2.4	9.1	8.1	1.3	1.6	1.6	1.9			19.6	18.2	0.6
WITH CAPABILITY	9.9	1.1	1.5	30.0	19.6	24.4	17.5			0.4	0.3	66.7

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

7.14 1989 GENERAL AVIATION AIRCRAFT WITH GUIDANCE AND CONTROL EQUIPMENT  
BY PRIMARY USE  
(EXCLUDES ROTORCRAFT)

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PRIMARY USE	GUIDANCE AND CONTROL EQUIPMENT											
	FLIGHT DIRECT	EFIS	FL MGT COMPT	-----AUTOPILOT-AXIS CONTROLS----- LONGITUDE	VERTICAL	LATERAL	APP	MODE	AUTO LAND	FL DATA FEEDER	NO GCE	
CORPORATE												
ESTIMATED POPULATION	8,335	1,112	1,321	10,530	10,028	10,029	9,375		293	369	909	
% STANDARD ERROR	3.8	10.8	10.6	3.8	3.8	3.8	3.9		32.9	24.6	20.0	
% WITH CAPABILITY	71.9	9.6	11.4	90.8	86.5	86.5	80.8		2.5	3.2	7.8	
BUSINESS												
ESTIMATED POPULATION	7,451	561	764	23,565	16,650	19,525	15,018		206	64	11,672	
% STANDARD ERROR	6.0	25.0	21.0	3.4	4.0	3.8	4.4		42.2	75.7	5.5	
% WITH CAPABILITY	20.1	1.5	2.1	63.7	45.0	52.8	40.6		0.6	0.2	31.5	
PERSONAL												
ESTIMATED POPULATION	4,948	610	752	30,222	14,323	21,888	13,117		179	22	88,524	
% STANDARD ERROR	8.3	24.4	20.8	3.1	4.7	3.8	5.0		45.8	107.5	1.3	
% WITH CAPABILITY	4.0	0.5	0.6	24.4	11.6	17.7	10.6		0.1	0.0	71.5	
INSTRUCTIONAL												
ESTIMATED POPULATION	476	5	131	2,806	1,711	2,018	1,383		2	0	13,859	
% STANDARD ERROR	27.5	193.1	54.5	11.6	14.2	13.6	16.2		183.5	0.0	5.1	
% WITH CAPABILITY	2.8	0.0	0.8	16.4	10.0	11.8	8.1		0.0	0.0	81.2	
AERIAL APPLICATION												
ESTIMATED POPULATION	22	7	7	111	102	103	43		0	0	6,117	
% STANDARD ERROR	166.5	358.4	358.4	58.6	62.7	61.8	107.1		0.0	0.0	3.5	
% WITH CAPABILITY	0.3	0.1	0.1	1.8	1.6	1.7	0.7		0.0	0.0	97.7	
AERIAL OBSERVATION												
ESTIMATED POPULATION	182	54	13	1,180	819	922	491		0	0	3,221	
% STANDARD ERROR	39.8	68.3	203.8	18.3	21.7	19.9	28.9		0.0	0.0	10.3	
% WITH CAPABILITY	4.0	1.2	0.3	26.2	18.2	20.4	10.9		0.0	0.0	71.4	
OTHER WORK USE												
ESTIMATED POPULATION	55	0	4	139	73	125	55		2	0	1,680	
% STANDARD ERROR	70.7	0.0	464.8	49.8	65.0	54.1	78.8		235.8	0.0	13.4	
% WITH CAPABILITY	3.0	0.0	0.2	7.6	4.0	6.9	3.0		0.1	0.0	92.2	
COMMUTER AIR CARRIER												
ESTIMATED POPULATION	476	63	16	497	495	528	471		0	73	844	
% STANDARD ERROR	21.6	37.3	99.4	21.0	21.1	20.2	21.8		0.0	43.5	15.5	
% WITH CAPABILITY	33.1	4.4	1.1	34.6	34.4	36.7	32.7		0.0	5.1	58.6	

7.14 1989 GENERAL AVIATION AIRCRAFT WITH GUIDANCE AND CONTROL EQUIPMENT  
BY PRIMARY USE  
(EXCLUDES ROTORCRAFT)

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PRIMARY USE	GUIDANCE AND CONTROL EQUIPMENT										FL DATA REC'D	NO GCE
	FLIGHT DIRECT	EFIS	FL MGT COMPT'R	-----AUTOPILOT-AXIS CONTROLS-----			AUTO LAND					
				LONGITUDE	VERTICAL	LATERAL	APP MODE					
AIR TAXI												
ESTIMATED POPULATION	2,158	69	246	3,763	3,381	3,444	2,984	23		0	1,494	
% STANDARD ERROR	10.1	63.6	33.8	8.6	8.9	8.9	9.4	115.9		0.0	13.4	
% WITH CAPABILITY	39.3	1.3	4.5	68.6	61.6	62.7	54.4	0.4		0.0	27.2	
OTHER												
ESTIMATED POPULATION	694	108	111	1,089	926	1,064	858	111		24	2,054	
% STANDARD ERROR	18.2	45.0	44.2	15.9	16.6	16.2	18.0	69.9		66.0	12.4	
% WITH CAPABILITY	20.9	3.3	3.4	32.8	27.9	32.1	25.8	3.3		0.7	61.9	
INACTIVE												
ESTIMATED POPULATION	759	228	239	3,039	1,860	2,848	1,032	83		130	40,619	
% STANDARD ERROR	12.9	25.9	31.8	8.6	9.4	9.2	13.7	55.2		35.2	0.7	
% WITH CAPABILITY	1.7	0.5	0.5	6.9	4.2	6.4	2.3	0.2		0.3	91.8	
TOTAL												
ESTIMATED POPULATION	25,368	2,879	3,746	76,898	50,286	62,604	44,898	937		685	171,160	
% STANDARD ERROR	2.4	9.1	8.1	1.3	1.6	1.6	1.9	19.6		18.2	0.6	
% WITH CAPABILITY	9.9	1.1	1.5	30.0	19.6	24.4	17.5	0.4		0.3	66.7	

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

7.15 1989 GENERAL AVIATION AIRCRAFT WITH GUIDANCE AND CONTROL EQUIPMENT  
BY REGION OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 2

REGION	GUIDANCE AND CONTROL EQUIPMENT												
	FLIGHT DIRECT	EFIS	FL MGT COMPTR	-----LONGITUDE	-----VERTICAL	-----LATERAL	-----APP	-----MODE	AUTO LAND	FL DATA REC'D	NO GCE		
ALASKAN													
ESTIMATED POPULATION	156	39	61	586	368	445	223		2	5	7,523		
% STANDARD ERROR	40.8	76.6	83.8	23.8	28.5	27.0	36.7		338.5	151.1	6.1		
% WITH CAPABILITY	1.9	0.5	0.7	7.0	4.4	5.3	2.7		0.0	0.1	90.3		
CENTRAL													
ESTIMATED POPULATION	1,439	177	211	3,832	2,620	3,150	2,102		17	45	9,666		
% STANDARD ERROR	13.6	29.8	35.2	9.5	11.0	10.2	12.1		139.0	55.4	6.3		
% WITH CAPABILITY	10.3	1.3	1.5	27.5	18.8	22.6	15.1		0.1	0.3	69.4		
EASTERN													
ESTIMATED POPULATION	3,291	227	407	9,503	5,595	7,450	5,669		80	71	17,631		
% STANDARD ERROR	8.9	26.7	25.0	5.9	7.3	6.6	7.5		52.4	38.7	4.5		
% WITH CAPABILITY	11.6	0.8	1.4	33.5	19.7	26.3	20.0		0.3	0.3	62.1		
GREAT LAKES													
ESTIMATED POPULATION	4,689	540	808	12,875	8,532	10,702	7,623		81	66	31,386		
% STANDARD ERROR	7.5	21.2	18.2	5.0	5.9	5.5	6.3		53.1	35.9	3.3		
% WITH CAPABILITY	10.3	1.2	1.8	28.2	18.7	23.5	16.7		0.2	0.1	68.8		
NEW ENGLAND													
ESTIMATED POPULATION	873	39	105	3,107	1,890	2,258	1,750		5	12	6,703		
% STANDARD ERROR	19.1	65.8	45.5	11.0	13.7	12.7	14.0		321.2	130.3	7.4		
% WITH CAPABILITY	8.5	0.4	1.0	30.4	18.5	22.1	17.1		0.0	0.1	65.6		
NORTHWEST MOUNTAIN													
ESTIMATED POPULATION	1,725	283	349	6,277	3,713	5,143	3,320		57	64	18,145		
% STANDARD ERROR	13.0	34.5	29.2	7.5	9.4	8.3	10.1		79.5	74.3	4.4		
% WITH CAPABILITY	6.8	1.1	1.4	24.7	14.6	20.3	13.1		0.2	0.3	71.5		
SOUTHERN													
ESTIMATED POPULATION	4,932	611	600	14,288	10,070	11,728	9,021		65	79	25,147		
% STANDARD ERROR	6.9	20.2	19.8	4.6	5.3	5.0	5.6		39.2	41.9	3.8		
% WITH CAPABILITY	12.1	1.5	1.5	35.0	24.7	28.7	22.1		0.2	0.2	61.6		
SOUTHWESTERN													
ESTIMATED POPULATION	3,955	541	477	11,383	7,473	9,359	6,925		273	68	21,147		
% STANDARD ERROR	8.1	24.2	22.9	5.3	6.3	5.8	6.7		37.1	75.8	4.1		
% WITH CAPABILITY	11.8	1.6	1.4	34.0	22.3	27.9	20.7		0.8	0.2	63.1		

7.15 1989 GENERAL AVIATION AIRCRAFT WITH GUIDANCE AND CONTROL EQUIPMENT  
BY REGION OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 2

REGION	FLIGHT DIRECT	EFIS	FL MGT COMPT	GUIDANCE AND CONTROL EQUIPMENT				AUTO LAND	FL DATA REC'D	NO GCE
				-----LONGITUDE	-----VERTICAL	-----LATERAL	-----APP MODE			
WESTERN-PACIFIC										
ESTIMATED POPULATION	3,982	367	592	13,776	8,981	11,232	7,483	351	255	28,522
% STANDARD ERROR	8.6	25.1	20.9	4.9	5.9	5.4	6.5	36.9	34.5	3.4
% WITH CAPABILITY	9.1	0.8	1.4	31.4	20.5	25.6	17.1	0.8	0.6	65.0
TOTAL										
ESTIMATED POPULATION	25,368	2,879	3,746	76,898	50,286	62,604	44,898	937	685	171,160
% STANDARD ERROR	2.4	9.1	8.1	1.3	1.6	1.6	1.9	19.6	18.2	0.6
% WITH CAPABILITY	9.9	1.1	1.5	30.0	19.6	24.4	17.5	0.4	0.3	66.7

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

7.16 1989 GENERAL AVIATION AIRCRAFT WITH GUIDANCE AND CONTROL EQUIPMENT  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 7

STATE	FLIGHT DIRECT	EFIS	FL MGT COMPTR	GUIDANCE AND CONTROL EQUIPMENT				AUTO LAND	FL DATA REC'D	NO GCE
				-----	-----	-----	-----			
				LONGITUDE	VERTICAL	LATERAL	APP MODE			
ALABAMA										
ESTIMATED POPULATION	511	151	126	1,335	991	1,009	830	2	1	2,148
% STANDARD ERROR	23.8	49.4	48.8	16.2	18.6	18.2	19.8	331.2	236.7	13.9
% WITH CAPABILITY	14.0	4.1	3.5	36.6	27.2	27.7	22.8	0.0	0.0	58.9
ALASKA										
ESTIMATED POPULATION	156	39	61	586	368	445	223	2	5	7,523
% STANDARD ERROR	40.8	76.6	83.8	23.8	28.5	27.0	36.7	338.5	151.1	6.1
% WITH CAPABILITY	1.9	0.5	0.7	7.0	4.4	5.3	2.7	0.0	0.1	90.3
ARIZONA										
ESTIMATED POPULATION	598	73	39	1,581	1,263	1,430	918	149	168	4,288
% STANDARD ERROR	24.1	72.4	100.5	15.4	17.1	16.0	20.0	53.9	48.4	9.6
% WITH CAPABILITY	9.7	1.2	0.6	25.6	20.5	23.2	14.9	2.4	2.7	69.5
ARKANSAS										
ESTIMATED POPULATION	378	66	24	873	588	565	359	23	3	2,095
% STANDARD ERROR	26.3	67.9	94.9	19.4	22.5	23.1	27.9	131.4	241.4	13.9
% WITH CAPABILITY	12.6	2.2	0.8	29.2	19.7	18.9	12.0	0.8	0.1	70.0
CALIFORNIA										
ESTIMATED POPULATION	3,174	274	521	11,329	7,191	8,986	6,021	202	76	22,241
% STANDARD ERROR	9.6	26.7	22.0	5.5	6.6	6.1	7.2	50.4	42.6	4.0
% WITH CAPABILITY	9.2	0.8	1.5	32.7	20.8	25.9	17.4	0.6	0.2	64.2
COLORADO										
ESTIMATED POPULATION	527	128	61	1,556	869	1,278	868	41	41	3,459
% STANDARD ERROR	25.7	57.5	78.0	15.7	20.0	17.1	20.5	105.0	105.0	10.6
% WITH CAPABILITY	10.2	2.5	1.2	30.0	16.7	24.6	16.7	0.8	0.8	66.7
CONNECTICUT										
ESTIMATED POPULATION	224	16	18	754	508	611	505	0	8	1,463
% STANDARD ERROR	37.4	91.5	74.5	22.0	26.5	25.2	26.5	0.0	123.5	16.7
% WITH CAPABILITY	9.8	0.7	0.8	33.0	22.2	26.7	22.1	0.0	0.3	64.0
DELAWARE										
ESTIMATED POPULATION	521	11	24	778	680	728	572	11	19	702
% STANDARD ERROR	23.0	131.6	69.7	20.0	21.2	20.6	23.4	59.0	68.5	24.5
% WITH CAPABILITY	33.0	0.7	1.5	49.3	43.1	46.2	36.3	0.7	1.2	44.5

7.16 1989 GENERAL AVIATION AIRCRAFT WITH GUIDANCE AND CONTROL EQUIPMENT  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 7

STATE	GUIDANCE AND CONTROL EQUIPMENT										
	FLIGHT DIRECT	EFIS	FL MGT COMPT	LONGITUDE	VERTICAL	AXIS CONTROLS	LATERAL	APP MODE	AUTO LAND	FL DATA REC'D	NO GCE
D.C.	21	2	1	30	27	30	28		0	3	7
	101.7	362.2	287.3	92.4	96.1	92.4	92.6		0.0	202.6	267.7
	55.2	6.6	4.0	79.9	73.2	79.9	75.9		0.0	8.0	20.1
FLORIDA	1,799	153	168	5,558	3,952	4,608	3,540		19	14	9,129
	12.4	40.9	38.8	7.9	9.0	8.6	9.4		62.4	89.6	6.6
	11.8	1.0	1.1	36.5	26.0	30.3	23.3		0.1	0.1	60.0
GEORGIA	675	123	157	1,878	1,439	1,653	1,223		29	50	3,988
	20.8	37.1	37.0	13.5	14.9	14.0	16.1		64.6	57.4	10.1
	11.1	2.0	2.6	30.9	23.7	27.2	20.1		0.5	0.8	65.6
HAWAII	23	2	6	56	52	50	48		0	3	412
	117.2	233.1	208.9	71.2	76.0	75.0	82.5		0.0	249.4	31.2
	4.7	0.4	1.2	11.6	10.8	10.4	10.0		0.0	0.6	85.8
IDAHO	94	21	58	522	361	439	226		0	0	1,663
	51.8	108.6	83.0	26.4	31.6	28.6	37.8		0.0	0.0	15.3
	4.0	0.9	2.5	22.5	15.5	18.9	9.7		0.0	0.0	71.5
ILLINOIS	1,065	149	121	2,688	1,765	2,388	1,650		15	10	5,106
	17.1	39.3	54.4	11.8	14.2	12.6	14.6		50.9	101.8	8.8
	13.0	1.8	1.5	32.7	21.5	29.1	20.1		0.2	0.1	62.2
INDIANA	514	95	244	1,371	786	1,001	739		0	1	3,063
	23.6	60.0	37.1	16.2	19.9	18.7	20.6		0.0	227.1	11.6
	11.2	2.1	5.3	29.8	17.1	21.8	16.1		0.0	0.0	66.6
IOWA	284	14	65	817	541	762	497		14	0	2,012
	30.1	94.8	64.0	20.7	24.0	21.3	24.5		168.9	0.0	14.1
	9.6	0.5	2.2	27.6	18.3	25.8	16.8		0.5	0.0	68.1

7.16 1989 GENERAL AVIATION AIRCRAFT WITH GUIDANCE AND CONTROL EQUIPMENT  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

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STATE	GUIDANCE AND CONTROL EQUIPMENT										NO GCE
	FLIGHT DIRECT	EFIS	FL MGT COMPTR	-----AUTOPILOT-AXIS CONTROLS----- LONGITUDE    VERTICAL    LATERAL    APP MODE			AUTO LAND	FL DATA RECORDER			
KANSAS											
ESTIMATED POPULATION	443	58	54	1,277	918	1,196	690	0	0	2,694	
% STANDARD ERROR	25.0	60.7	65.9	16.9	19.2	17.2	21.4	0.0	0.0	12.1	
% WITH CAPABILITY	10.9	1.4	1.3	31.4	22.6	29.4	17.0	0.0	0.0	66.2	
KENTUCKY											
ESTIMATED POPULATION	172	12	7	635	304	424	347	0	3	1,140	
% STANDARD ERROR	36.5	78.4	101.3	24.0	30.4	29.2	30.7	0.0	150.8	19.0	
% WITH CAPABILITY	9.2	0.6	0.4	34.0	16.3	22.7	18.6	0.0	0.2	61.0	
LOUISIANA											
ESTIMATED POPULATION	329	2	33	866	578	634	483	0	0	2,252	
% STANDARD ERROR	28.6	169.6	83.2	20.3	23.5	22.7	27.2	0.0	0.0	13.4	
% WITH CAPABILITY	10.3	0.1	1.0	27.1	18.1	19.9	15.1	0.0	0.0	70.6	
MAINE											
ESTIMATED POPULATION	50	7	13	341	216	261	216	0	3	1,357	
% STANDARD ERROR	72.0	201.2	124.0	32.8	40.4	36.4	39.7	0.0	200.6	16.5	
% WITH CAPABILITY	2.9	0.4	0.8	20.0	12.7	15.3	12.7	0.0	0.2	79.6	
MARYLAND											
ESTIMATED POPULATION	199	6	78	965	517	771	560	0	6	2,126	
% STANDARD ERROR	39.0	204.0	71.9	20.0	26.1	21.9	25.6	0.0	196.4	13.7	
% WITH CAPABILITY	6.2	0.2	2.4	30.2	16.2	24.1	17.5	0.0	0.2	66.5	
MASSACHUSETTS											
ESTIMATED POPULATION	401	9	59	1,221	779	959	732	4	0	2,070	
% STANDARD ERROR	28.9	109.8	67.0	17.8	21.3	19.8	21.8	399.1	0.0	13.6	
% WITH CAPABILITY	11.5	0.3	1.7	35.0	22.4	27.5	21.0	0.1	0.0	59.4	
MICHIGAN											
ESTIMATED POPULATION	950	95	164	2,491	1,842	1,977	1,476	55	34	6,431	
% STANDARD ERROR	16.3	48.3	33.2	11.6	12.9	12.7	14.3	71.6	41.6	7.8	
% WITH CAPABILITY	10.4	1.0	1.8	27.2	20.1	21.6	16.1	0.6	0.4	70.2	
MINNESOTA											
ESTIMATED POPULATION	325	21	60	1,275	787	1,198	689	0	3	4,506	
% STANDARD ERROR	28.8	86.0	57.6	16.8	20.7	17.3	21.3	0.0	159.7	9.2	
% WITH CAPABILITY	5.6	0.4	1.0	21.9	13.5	20.6	11.8	0.0	0.0	77.3	



7.16 1989 GENERAL AVIATION AIRCRAFT WITH GUIDANCE AND CONTROL EQUIPMENT  
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STATE	FLIGHT DIRECT	EFIS	FL MGT COMPTR	GUIDANCE AND CONTROL EQUIPMENT				AUTO LAND	FL DATA RECORDER	NO GCE
				-----	-----	-----	-----			
				LONGITUDE	VERTICAL	LATERAL	APP MODE			
MISSISSIPPI										
ESTIMATED POPULATION	119	20	19	785	498	413	409	0	0	1,339
% STANDARD ERROR	44.9	136.4	121.3	21.9	25.4	27.9	29.2	0.0	0.0	17.2
% WITH CAPABILITY	5.6	1.0	0.9	36.7	2.3	19.3	19.1	0.0	0.0	62.6
MISSOURI										
ESTIMATED POPULATION	539	87	78	1,306	912	869	642	2	45	3,460
% STANDARD ERROR	23.0	37.9	62.8	16.3	18.8	18.8	22.3	158.6	55.4	11.0
% WITH CAPABILITY	10.9	1.8	1.6	26.4	18.5	17.6	13.0	0.0	0.9	70.0
MONTANA										
ESTIMATED POPULATION	120	31	33	347	274	273	223	17	0	1,925
% STANDARD ERROR	47.6	84.2	79.4	31.3	34.9	34.8	38.8	96.2	0.0	14.0
% WITH CAPABILITY	5.3	1.3	1.4	15.3	12.0	12.0	9.8	0.7	0.0	84.6
NEBRASKA										
ESTIMATED POPULATION	172	18	15	433	248	323	273	2	0	1,500
% STANDARD ERROR	37.4	96.6	97.1	27.6	34.3	30.7	33.9	281.1	0.0	16.3
% WITH CAPABILITY	8.8	0.9	0.7	22.0	12.6	16.4	13.9	0.1	0.0	76.3
NEVADA										
ESTIMATED POPULATION	186	18	27	811	475	765	495	0	8	1,581
% STANDARD ERROR	40.1	111.0	92.0	21.5	27.3	23.3	27.7	0.0	115.8	15.5
% WITH CAPABILITY	7.3	0.7	1.0	31.8	18.6	30.0	19.4	0.0	0.3	61.9
NEW HAMPSHIRE										
ESTIMATED POPULATION	152	7	14	550	280	247	145	0	1	967
% STANDARD ERROR	46.5	177.7	109.8	27.4	37.4	38.0	47.0	0.0	793.4	19.0
% WITH CAPABILITY	9.4	0.4	0.9	33.9	17.3	15.2	9.0	0.0	0.1	59.6
NEW JERSEY										
ESTIMATED POPULATION	478	51	95	1,602	900	1,016	1,001	18	24	2,656
% STANDARD ERROR	24.3	77.9	53.3	15.2	19.3	18.4	18.6	128.2	68.4	12.2
% WITH CAPABILITY	11.1	1.2	2.2	37.1	20.8	23.5	23.2	0.4	0.6	61.5
NEW MEXICO										
ESTIMATED POPULATION	198	50	4	940	678	885	704	0	20	1,603
% STANDARD ERROR	40.1	91.8	219.0	20.2	23.4	20.9	23.9	0.0	117.7	14.9
% WITH CAPABILITY	7.4	1.9	0.2	35.4	25.5	33.3	26.5	0.0	0.8	60.2

7.16 1989 GENERAL AVIATION AIRCRAFT WITH GUIDANCE AND CONTROL EQUIPMENT  
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(EXCLUDES ROTORCRAFT)

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STATE	FLIGHT DIRECT	EFIS	FL MGT COMPT	GUIDANCE AND CONTROL EQUIPMENT				AUTO LAND	FL DATA RECORDER	NO GCE
				-----AUTOPILOT-AXIS CONTROLS-----	LONGITUDE	VERTICAL	LATERAL	APP MODE		
NEW YORK										
ESTIMATED POPULATION	769	92	81	2,283	1,324	1,889	1,399	44	2	4,944
% STANDARD ERROR	18.1	33.0	34.6	12.5	15.6	13.6	15.4	73.7	160.8	8.8
% WITH CAPABILITY	10.1	1.2	1.1	30.1	17.4	24.9	18.4	0.6	0.0	65.2
NORTH CAROLINA										
ESTIMATED POPULATION	801	95	38	1,966	1,336	1,514	1,179	4	0	3,473
% STANDARD ERROR	17.3	46.5	72.6	13.1	14.9	14.4	15.5	111.1	0.0	10.5
% WITH CAPABILITY	14.3	1.7	0.7	35.1	23.8	27.0	21.0	0.1	0.0	62.0
NORTH DAKOTA										
ESTIMATED POPULATION	52	0	2	309	175	342	158	0	0	1,433
% STANDARD ERROR	67.5	0.0	89.0	35.4	45.8	34.2	48.4	0.0	0.0	16.5
% WITH CAPABILITY	2.8	0.0	0.1	16.8	9.5	18.6	8.6	0.0	0.0	78.1
OHIO										
ESTIMATED POPULATION	1,259	121	182	3,082	1,961	2,475	1,925	0	14	5,838
% STANDARD ERROR	14.7	36.2	35.3	10.5	12.5	11.7	12.7	0.0	96.3	8.2
% WITH CAPABILITY	13.8	1.3	2.0	33.7	21.4	27.1	21.0	0.0	0.1	63.8
OKLAHOMA										
ESTIMATED POPULATION	587	33	92	1,464	1,056	1,332	1,012	8	0	2,875
% STANDARD ERROR	24.3	89.6	61.9	15.7	18.0	16.3	18.7	92.6	0.0	12.0
% WITH CAPABILITY	13.1	0.7	2.1	32.7	23.6	29.7	22.6	0.2	0.0	64.2
OREGON										
ESTIMATED POPULATION	529	84	111	1,693	924	1,300	802	0	18	3,404
% STANDARD ERROR	24.0	61.7	48.8	14.6	18.7	16.6	20.7	0.0	114.0	10.5
% WITH CAPABILITY	10.0	1.6	2.1	31.9	17.4	24.5	15.1	0.0	0.3	64.1
PENNSYLVANIA										
ESTIMATED POPULATION	709	35	84	2,136	1,186	1,630	1,236	4	11	4,348
% STANDARD ERROR	20.0	67.4	63.3	12.9	16.1	14.4	16.3	122.0	75.5	9.4
% WITH CAPABILITY	10.4	0.5	1.2	31.4	17.4	24.0	18.2	0.1	0.2	63.9
RHODE ISLAND										
ESTIMATED POPULATION	21	0	0	104	35	80	91	1	0	362
% STANDARD ERROR	114.3	0.0	0.0	61.5	92.5	68.6	66.4	486.0	0.0	34.3
% WITH CAPABILITY	4.2	0.0	0.0	21.0	7.0	16.2	18.4	0.3	0.0	72.9

7.16 1989 GENERAL AVIATION AIRCRAFT WITH GUIDANCE AND CONTROL EQUIPMENT  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 6 OF 7

STATE	FLIGHT DIRECT	EFIS	FL MGT COMETR	GUIDANCE AND CONTROL EQUIPMENT				AUTO LAND	FL DATA RECORDER	NO GCE
				-----AUTOPILOT-AXIS CONTROLS----- LONGITUDE	VERTICAL	LATERAL	APP MODE			
SOUTH CAROLINA	227	4	8	688	563	706	517	1	4	1,438
	33.2	200.5	128.9	22.4	24.2	22.2	25.3	426.2	184.3	16.8
	10.2	0.2	0.3	30.9	25.3	31.7	23.2	0.1	0.2	64.5
SOUTH DAKOTA	132	48	20	304	226	249	233	0	0	1,156
	54.5	94.3	140.7	36.1	41.3	39.2	40.8	0.0	0.0	18.2
	8.9	3.2	1.4	20.4	15.2	16.7	15.6	0.0	0.0	77.6
TENNESSEE	567	51	75	1,314	897	1,283	912	10	7	2,187
	20.5	61.9	51.4	15.9	18.0	16.0	18.2	71.5	112.6	13.5
	15.6	1.4	2.1	36.1	24.7	35.3	25.1	0.3	0.2	60.1
TEXAS	2,463	390	325	7,240	4,573	5,943	4,368	242	45	12,322
	10.4	28.5	26.5	6.8	8.1	7.4	8.4	39.8	101.0	5.6
	12.2	1.9	1.6	35.9	22.7	29.5	21.7	1.2	0.2	61.1
UTAH	130	8	17	488	406	415	300	0	0	1,032
	48.1	169.2	124.3	27.6	30.3	30.6	35.5	0.0	0.0	20.7
	8.4	0.5	1.1	31.5	26.2	26.8	19.3	0.0	0.0	66.5
VERMONT	26	0	1	137	73	100	60	0	0	484
	103.7	0.0	542.8	50.9	67.4	56.8	73.8	0.0	0.0	27.0
	4.1	0.0	0.2	22.1	11.7	16.1	9.6	0.0	0.0	77.9
VIRGINIA	476	28	31	1,403	807	1,127	690	3	7	2,176
	23.6	52.6	73.9	15.8	19.2	17.4	21.3	297.2	141.3	13.4
	12.6	0.8	0.8	37.1	21.4	29.8	18.3	0.1	0.2	57.6
WASHINGTON	210	10	44	1,360	584	1,153	687	0	6	6,013
	28.9	76.0	57.3	16.7	23.5	18.3	22.4	0.0	93.8	7.9
	2.7	0.1	0.6	17.5	7.5	14.9	8.9	0.0	0.1	77.5

7.16 1989 GENERAL AVIATION AIRCRAFT WITH GUIDANCE AND CONTROL EQUIPMENT  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

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STATE	FLIGHT DIRECT	EFIS	FL MGT COMPTR	GUIDANCE AND CONTROL EQUIPMENT				AUTO LAND	FL DATA REC'D	NO GCE
				-----AUTOPILOT-AXIS CONTROLS-----	LONGITUDE	VERTICAL	LATERAL			
WEST VIRGINIA	119	0	13	305	153	258	182	0	0	671
% ESTIMATED POPULATION	55.2	0.0	147.6	34.2	45.7	36.4	43.2	0.0	0.0	26.0
% STANDARD ERROR	11.1	0.0	1.2	28.5	14.3	24.1	17.0	0.0	0.0	62.6
% WITH CAPABILITY										
WISCONSIN	391	11	16	1,354	989	1,073	752	10	4	3,852
% ESTIMATED POPULATION	26.1	117.2	115.5	16.4	18.9	18.3	21.5	144.8	193.8	10.3
% STANDARD ERROR	7.4	0.2	0.3	25.5	18.6	20.2	14.1	0.2	0.1	72.4
% WITH CAPABILITY										
WYOMING	114	1	24	310	295	286	214	0	0	649
% ESTIMATED POPULATION	53.5	279.8	133.0	34.6	35.8	36.5	41.1	0.0	0.0	23.1
% STANDARD ERROR	11.8	0.1	2.5	32.3	30.8	29.8	22.3	0.0	0.0	67.7
% WITH CAPABILITY										
PUERTO RICO	46	2	0	96	62	85	42	0	0	244
% ESTIMATED POPULATION	86.8	342.7	0.0	60.6	71.2	63.8	93.8	0.0	0.0	40.3
% STANDARD ERROR	13.4	0.6	0.0	27.9	17.8	24.6	12.0	0.0	0.0	70.5
% WITH CAPABILITY										
OTHER U.S. TERRITORIES	14	0	1	32	29	32	23	1	0	60
% ESTIMATED POPULATION	143.0	0.0	543.1	103.2	106.6	103.2	122.2	543.1	0.0	74.1
% STANDARD ERROR	15.5	0.0	1.3	34.8	31.1	34.8	25.2	1.3	0.0	65.2
% WITH CAPABILITY										
TOTAL	25,368	2,879	3,746	76,898	50,286	62,604	44,898	937	685	171,160
% ESTIMATED POPULATION	2.4	9.1	8.1	1.3	1.6	1.6	1.9	19.6	18.2	0.6
% STANDARD ERROR	9.9	1.1	1.5	30.0	19.6	24.4	17.5	0.4	0.3	66.7
% WITH CAPABILITY										

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

7.17 1989 GENERAL AVIATION AIRCRAFT EQUIPPED WITH AN ELECTRICAL SYSTEM AND/OR HAS AN EMERGENCY LOCATOR TRANSMITTER  
BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 3

AIRCRAFT TYPE	ELECTRICAL SYSTEM	EMERGENCY LOCATOR TRANSMITTER
FIXED WING		
FIXED WING - PISTON		
1 ENG: 1-3 SEATS		
ESTIMATED POPULATION	65,698	64,917
% STANDARD ERROR	1.0	1.1
% WITH CAPABILITY	74.8	73.9
1 ENG: 4+ SEATS		
ESTIMATED POPULATION	115,851	112,666
% STANDARD ERROR	0.4	0.5
% WITH CAPABILITY	96.3	93.7
1 ENGINE: TOTAL		
ESTIMATED POPULATION	181,549	177,583
% STANDARD ERROR	0.4	0.5
% WITH CAPABILITY	87.2	85.3
2 ENG: 1-6 SEATS		
ESTIMATED POPULATION	17,056	16,284
% STANDARD ERROR	1.0	1.4
% WITH CAPABILITY	95.6	91.3
2 ENG: 7+ SEATS		
ESTIMATED POPULATION	8,194	7,620
% STANDARD ERROR	1.4	2.1
% WITH CAPABILITY	94.3	87.7
2 ENGINE: TOTAL		
ESTIMATED POPULATION	25,250	23,904
% STANDARD ERROR	0.8	1.2
% WITH CAPABILITY	95.2	90.1
PISTON: OTHER		
ESTIMATED POPULATION	194	170
% STANDARD ERROR	0.0	4.5
% WITH CAPABILITY	100.0	87.8
PISTON: TOTAL		
ESTIMATED POPULATION	206,992	201,657
% STANDARD ERROR	0.4	0.5
% WITH CAPABILITY	88.2	85.9

7.17 1989 GENERAL AVIATION AIRCRAFT EQUIPPED WITH AN ELECTRICAL SYSTEM AND/OR HAS AN EMERGENCY LOCATOR TRANSMITTER  
BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 3

AIRCRAFT TYPE	ELECTRICAL SYSTEM	EMERGENCY LOCATOR TRANSMITTER
FIXED WING - TURBOPROP		
2 ENG: 1-12 SEATS		
ESTIMATED POPULATION	4,982	4,808
% STANDARD ERROR	0.9	1.7
% WITH CAPABILITY	98.0	94.6
2 ENG: 13+ SEATS		
ESTIMATED POPULATION	1,406	1,351
% STANDARD ERROR	1.4	1.8
% WITH CAPABILITY	97.5	93.7
2 ENGINE: TOTAL		
ESTIMATED POPULATION	6,387	6,159
% STANDARD ERROR	0.8	1.4
% WITH CAPABILITY	97.9	94.4
TURBOPROP: OTHER		
ESTIMATED POPULATION	296	116
% STANDARD ERROR	6.6	29.1
% WITH CAPABILITY	90.7	35.7
TURBOPROP: TOTAL		
ESTIMATED POPULATION	6,683	6,275
% STANDARD ERROR	0.8	1.5
% WITH CAPABILITY	97.6	91.6
FIXED WING - TURBOJET		
2 ENGINE TURBOJET		
ESTIMATED POPULATION	4,096	2,391
% STANDARD ERROR	0.9	5.1
% WITH CAPABILITY	97.3	56.8
TURBOJET: OTHER		
ESTIMATED POPULATION	517	154
% STANDARD ERROR	1.6	22.0
% WITH CAPABILITY	98.1	29.3
TURBOJET: TOTAL		
ESTIMATED POPULATION	4,613	2,546
% STANDARD ERROR	0.8	5.0
% WITH CAPABILITY	97.4	53.7

7.17 1989 GENERAL AVIATION AIRCRAFT EQUIPPED WITH AN ELECTRICAL SYSTEM AND/OR HAS AN EMERGENCY LOCATOR TRANSMITTER  
BY AIRCRAFT TYPE  
(EXCLUDES ROTORCRAFT)

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AIRCRAFT TYPE	ELECTRICAL SYSTEM	EMERGENCY LOCATOR TRANSMITTER
FIXED WING: TOTAL		
ESTIMATED POPULATION	218,288	210,478
% STANDARD ERROR	0.4	0.4
% WITH CAPABILITY	88.6	85.4
ROTORCRAFT		
PISTON		
ESTIMATED POPULATION	N/A	N/A
% STANDARD ERROR	N/A	N/A
% WITH CAPABILITY	N/A	N/A
TURBINE		
ESTIMATED POPULATION	N/A	N/A
% STANDARD ERROR	N/A	N/A
% WITH CAPABILITY	N/A	N/A
ROTORCRAFT: TOTAL		
ESTIMATED POPULATION	N/A	N/A
% STANDARD ERROR	N/A	N/A
% WITH CAPABILITY	N/A	N/A
OTHER		
ESTIMATED POPULATION	1,706	176
% STANDARD ERROR	8.8	30.9
% WITH CAPABILITY	16.6	1.7
TOTAL		
ESTIMATED POPULATION	219,995	210,654
% STANDARD ERROR	0.4	0.4
% WITH CAPABILITY	85.7	82.1

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

7.18 1989 GENERAL AVIATION AIRCRAFT EQUIPPED WITH AN ELECTRICAL SYSTEM AND/OR HAS AN EMERGENCY LOCATOR TRANSMITTER  
BY PRIMARY USE  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 2

PRIMARY USE	ELECTRICAL SYSTEM	EMERGENCY LOCATOR TRANSMITTER
CORPORATE		
ESTIMATED POPULATION	11,138	9,507
% STANDARD ERROR	3.9	4.6
% WITH CAPABILITY	96.0	82.0
BUSINESS		
ESTIMATED POPULATION	35,269	34,789
% STANDARD ERROR	2.8	2.8
% WITH CAPABILITY	95.3	94.0
PERSONAL		
ESTIMATED POPULATION	106,504	108,056
% STANDARD ERROR	1.2	1.2
% WITH CAPABILITY	86.1	87.3
INSTRUCTIONAL		
ESTIMATED POPULATION	15,522	15,164
% STANDARD ERROR	4.9	4.9
% WITH CAPABILITY	90.9	88.8
AERIAL APPLICATION		
ESTIMATED POPULATION	5,860	765
% STANDARD ERROR	3.7	20.7
% WITH CAPABILITY	93.6	12.2
AERIAL OBSERVATION		
ESTIMATED POPULATION	4,008	3,984
% STANDARD ERROR	9.5	9.5
% WITH CAPABILITY	88.8	88.3
OTHER WORK USE		
ESTIMATED POPULATION	1,061	839
% STANDARD ERROR	17.7	20.8
% WITH CAPABILITY	58.2	46.0
COMPUTER AIR CARRIER		
ESTIMATED POPULATION	1,244	1,211
% STANDARD ERROR	11.6	11.9
% WITH CAPABILITY	86.5	84.2



7.18 1989 GENERAL AVIATION AIRCRAFT EQUIPPED WITH AN ELECTRICAL SYSTEM AND/OR HAS AN EMERGENCY LOCATOR TRANSMITTER  
BY PRIMARY USE  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 2

PRIMARY USE	ELECTRICAL SYSTEM	EMERGENCY LOCATOR TRANSMITTER
AIR TAXI		
ESTIMATED POPULATION	5,343	5,036
% STANDARD ERROR	7.1	7.4
% WITH CAPABILITY	97.3	91.8
OTHER		
ESTIMATED POPULATION	2,785	2,352
% STANDARD ERROR	10.3	11.2
% WITH CAPABILITY	83.9	70.8
INACTIVE		
ESTIMATED POPULATION	30,748	28,327
% STANDARD ERROR	1.5	2.0
% WITH CAPABILITY	69.5	64.0
TOTAL		
ESTIMATED POPULATION	219,995	210,654
% STANDARD ERROR	0.4	0.4
% WITH CAPABILITY	85.7	82.1

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

7.19 1989 GENERAL AVIATION AIRCRAFT EQUIPPED WITH AN ELECTRICAL SYSTEM AND/OR HAS AN EMERGENCY LOCATOR TRANSMITTER  
BY REGION OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 2

REGION	ELECTRICAL SYSTEM	EMERGENCY LOCATOR TRANSMITTER
ALASKAN		
ESTIMATED POPULATION	7,538	7,869
% STANDARD ERROR	6.1	5.9
% WITH CAPABILITY	90.5	94.5
CENTRAL		
ESTIMATED POPULATION	11,657	10,920
% STANDARD ERROR	5.7	5.9
% WITH CAPABILITY	83.7	78.4
EASTERN		
ESTIMATED POPULATION	24,193	23,894
% STANDARD ERROR	3.8	3.9
% WITH CAPABILITY	85.3	84.2
GREAT LAKES		
ESTIMATED POPULATION	38,589	37,608
% STANDARD ERROR	2.9	3.0
% WITH CAPABILITY	84.6	82.5
NEW ENGLAND		
ESTIMATED POPULATION	8,828	8,884
% STANDARD ERROR	6.5	6.5
% WITH CAPABILITY	86.4	87.0
NORTHWEST MOUNTAIN		
ESTIMATED POPULATION	21,701	20,618
% STANDARD ERROR	4.1	4.2
% WITH CAPABILITY	85.5	81.3
SOUTHERN		
ESTIMATED POPULATION	35,649	33,698
% STANDARD ERROR	3.0	3.1
% WITH CAPABILITY	87.3	82.5
SOUTHWESTERN		
ESTIMATED POPULATION	28,671	26,455
% STANDARD ERROR	3.5	3.6
% WITH CAPABILITY	85.6	79.0

7.19 1989 GENERAL AVIATION AIRCRAFT EQUIPPED WITH AN ELECTRICAL SYSTEM AND/OR HAS AN EMERGENCY LOCATOR TRANSMITTER  
BY REGION OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 2

REGION	ELECTRICAL SYSTEM	EMERGENCY LOCATOR TRANSMITTER
WESTERN-PACIFIC		
ESTIMATED POPULATION	37,946	35,833
% STANDARD ERROR	2.9	3.0
% WITH CAPABILITY	86.5	81.7
TOTAL		
ESTIMATED POPULATION	219,995	210,654
% STANDARD ERROR	0.4	0.4
% WITH CAPABILITY	85.7	82.1

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

7.20 1989 GENERAL AVIATION AIRCRAFT EQUIPPED WITH AN ELECTRICAL SYSTEM AND/OR HAS AN EMERGENCY LOCATOR TRANSMITTER  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 7

STATE	ELECTRICAL SYSTEM	EMERGENCY LOCATOR TRANSMITTER
ALABAMA		
ESTIMATED POPULATION	3,319	3,001
% STANDARD ERROR	10.8	11.5
% WITH CAPABILITY	91.1	82.3
ALASKA		
ESTIMATED POPULATION	7,538	7,869
% STANDARD ERROR	6.1	5.9
% WITH CAPABILITY	90.5	94.5
ARIZONA		
ESTIMATED POPULATION	5,227	5,031
% STANDARD ERROR	8.7	8.9
% WITH CAPABILITY	84.7	81.5
ARKANSAS		
ESTIMATED POPULATION	2,740	2,270
% STANDARD ERROR	11.9	13.2
% WITH CAPABILITY	91.6	75.9
CALIFORNIA		
ESTIMATED POPULATION	30,173	28,419
% STANDARD ERROR	3.4	3.5
% WITH CAPABILITY	87.1	82.0
COLORADO		
ESTIMATED POPULATION	4,370	3,806
% STANDARD ERROR	9.7	10.4
% WITH CAPABILITY	84.2	73.3
CONNECTICUT		
ESTIMATED POPULATION	1,913	1,921
% STANDARD ERROR	14.3	14.2
% WITH CAPABILITY	83.7	84.1
DELAWARE		
ESTIMATED POPULATION	1,459	1,450
% STANDARD ERROR	15.9	16.0
% WITH CAPABILITY	92.5	91.9

7.20 1989 GENERAL AVIATION AIRCRAFT EQUIPPED WITH AN ELECTRICAL SYSTEM AND/OR HAS AN EMERGENCY LOCATOR TRANSMITTER  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 7

STATE	ELECTRICAL SYSTEM	EMERGENCY LOCATOR TRANSMITTER
D.C.	36	35
ESTIMATED POPULATION	92.2	95.5
% STANDARD ERROR	96.5	92.9
% WITH CAPABILITY		
FLORIDA	12,947	12,431
ESTIMATED POPULATION	5.3	5.5
% STANDARD ERROR	85.1	81.7
% WITH CAPABILITY		
GEORGIA	5,296	5,033
ESTIMATED POPULATION	8.5	8.8
% STANDARD ERROR	87.1	82.8
% WITH CAPABILITY		
HAWAII	408	363
ESTIMATED POPULATION	31.3	32.9
% STANDARD ERROR	84.9	75.6
% WITH CAPABILITY		
IDAHO	2,009	1,950
ESTIMATED POPULATION	13.9	14.1
% STANDARD ERROR	86.4	83.8
% WITH CAPABILITY		
ILLINOIS	7,256	7,127
ESTIMATED POPULATION	7.4	7.5
% STANDARD ERROR	88.3	86.8
% WITH CAPABILITY		
INDIANA	3,854	3,883
ESTIMATED POPULATION	10.2	10.1
% STANDARD ERROR	83.8	84.5
% WITH CAPABILITY		
IOWA	2,445	2,320
ESTIMATED POPULATION	12.7	13.0
% STANDARD ERROR	82.7	78.5
% WITH CAPABILITY		

7.20 1989 GENERAL AVIATION AIRCRAFT EQUIPPED WITH AN ELECTRICAL SYSTEM AND/OR HAS AN EMERGENCY LOCATOR TRANSMITTER  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 3 OF 7

STATE	ELECTRICAL SYSTEM	EMERGENCY LOCATOR TRANSMITTER
KANSAS		
ESTIMATED POPULATION	3,507	3,133
% STANDARD ERROR	10.6	11.1
% WITH CAPABILITY	86.2	77.0
KENTUCKY		
ESTIMATED POPULATION	1,635	1,603
% STANDARD ERROR	16.0	16.0
% WITH CAPABILITY	87.5	85.8
LOUISIANA		
ESTIMATED POPULATION	2,693	2,456
% STANDARD ERROR	12.1	12.5
% WITH CAPABILITY	84.4	77.0
MAINE		
ESTIMATED POPULATION	1,443	1,513
% STANDARD ERROR	16.0	15.3
% WITH CAPABILITY	84.6	88.7
MARYLAND		
ESTIMATED POPULATION	2,759	2,615
% STANDARD ERROR	12.1	12.3
% WITH CAPABILITY	86.3	81.8
MASSACHUSETTS		
ESTIMATED POPULATION	3,056	2,986
% STANDARD ERROR	11.4	11.5
% WITH CAPABILITY	87.7	85.7
MICHIGAN		
ESTIMATED POPULATION	7,663	7,406
% STANDARD ERROR	7.1	7.1
% WITH CAPABILITY	83.6	80.8
MINNESOTA		
ESTIMATED POPULATION	4,829	4,845
% STANDARD ERROR	8.9	8.9
% WITH CAPABILITY	82.9	83.1

7.20 1989 GENERAL AVIATION AIRCRAFT EQUIPPED WITH AN ELECTRICAL SYSTEM AND/OR HAS AN EMERGENCY LOCATOR TRANSMITTER  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

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STATE	ELECTRICAL SYSTEM	EMERGENCY LOCATOR TRANSMITTER
MISSISSIPPI		
ESTIMATED POPULATION	2,030	1,602
% STANDARD ERROR	13.8	15.5
% WITH CAPABILITY	94.9	74.9
MISSOURI		
ESTIMATED POPULATION	4,181	3,968
% STANDARD ERROR	9.9	10.1
% WITH CAPABILITY	84.6	80.3
MONTANA		
ESTIMATED POPULATION	1,941	1,823
% STANDARD ERROR	13.7	14.2
% WITH CAPABILITY	85.3	80.2
NEBRASKA		
ESTIMATED POPULATION	1,525	1,498
% STANDARD ERROR	15.4	15.9
% WITH CAPABILITY	77.6	76.2
NEVADA		
ESTIMATED POPULATION	2,138	2,020
% STANDARD ERROR	13.8	14.1
% WITH CAPABILITY	83.8	79.1
NEW HAMPSHIRE		
ESTIMATED POPULATION	1,415	1,469
% STANDARD ERROR	16.4	16.3
% WITH CAPABILITY	87.2	90.6
NEW JERSEY		
ESTIMATED POPULATION	3,845	3,851
% STANDARD ERROR	10.1	10.2
% WITH CAPABILITY	89.0	89.1
NEW MEXICO		
ESTIMATED POPULATION	1,998	1,957
% STANDARD ERROR	14.0	14.3
% WITH CAPABILITY	75.1	73.6

7.20 1989 GENERAL AVIATION AIRCRAFT EQUIPPED WITH AN ELECTRICAL SYSTEM AND/OR HAS AN EMERGENCY LOCATOR TRANSMITTER  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 5 OF 7

STATE	ELECTRICAL SYSTEM	EMERGENCY LOCATOR TRANSMITTER
NEW YORK		
ESTIMATED POPULATION	6,264	6,265
% STANDARD ERROR	7.8	7.8
% WITH CAPABILITY	82.6	82.6
NORTH CAROLINA		
ESTIMATED POPULATION	4,835	4,721
% STANDARD ERROR	8.8	8.9
% WITH CAPABILITY	86.3	84.3
NORTH DAKOTA		
ESTIMATED POPULATION	1,676	1,358
% STANDARD ERROR	15.6	16.9
% WITH CAPABILITY	91.3	74.0
OHIO		
ESTIMATED POPULATION	7,708	7,344
% STANDARD ERROR	7.1	7.2
% WITH CAPABILITY	84.3	80.3
OKLAHOMA		
ESTIMATED POPULATION	3,886	3,754
% STANDARD ERROR	10.1	10.4
% WITH CAPABILITY	86.7	83.8
OREGON		
ESTIMATED POPULATION	4,642	4,631
% STANDARD ERROR	9.1	9.1
% WITH CAPABILITY	87.4	87.2
PENNSYLVANIA		
ESTIMATED POPULATION	5,803	5,128
% STANDARD ERROR	8.1	8.3
% WITH CAPABILITY	85.3	84.2
RHODE ISLAND		
ESTIMATED POPULATION	435	436
% STANDARD ERROR	31.2	31.3
% WITH CAPABILITY	87.5	87.8



7.20 1989 GENERAL AVIATION AIRCRAFT EQUIPPED WITH AN ELECTRICAL SYSTEM AND/OR HAS AN EMERGENCY LOCATOR TRANSMITTER  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 6 OF 7

STATE	ELECTRICAL SYSTEM	EMERGENCY LOCATOR TRANSMITTER
<b>SOUTH CAROLINA</b>		
ESTIMATED POPULATION	1,898	1,768
% STANDARD ERROR	14.4	14.8
% WITH CAPABILITY	85.2	79.4
<b>SOUTH DAKOTA</b>		
ESTIMATED POPULATION	1,297	1,165
% STANDARD ERROR	17.5	18.0
% WITH CAPABILITY	87.1	78.1
<b>TENNESSEE</b>		
ESTIMATED POPULATION	3,271	3,164
% STANDARD ERROR	10.9	11.0
% WITH CAPABILITY	89.9	87.0
<b>TEXAS</b>		
ESTIMATED POPULATION	1,354	16,017
% STANDARD ERROR	4.6	4.8
% WITH CAPABILITY	86.1	79.4
<b>UTAH</b>		
ESTIMATED POPULATION	1,239	1,148
% STANDARD ERROR	18.3	19.1
% WITH CAPABILITY	79.9	74.0
<b>VERMONT</b>		
ESTIMATED POPULATION	567	558
% STANDARD ERROR	25.3	25.7
% WITH CAPABILITY	91.3	89.9
<b>VIRGINIA</b>		
ESTIMATED POPULATION	3,185	3,059
% STANDARD ERROR	11.0	11.2
% WITH CAPABILITY	84.3	81.0
<b>WASHINGTON</b>		
ESTIMATED POPULATION	6,684	6,438
% STANDARD ERROR	7.6	7.7
% WITH CAPABILITY	86.2	83.0

7.20 1989 GENERAL AVIATION AIRCRAFT EQUIPPED WITH AN ELECTRICAL SYSTEM AND/OR HAS AN EMERGENCY LOCATOR TRANSMITTER  
BY STATE OF BASED AIRCRAFT  
(EXCLUDES ROTORCRAFT)

PAGE 7 OF 7

STATE	ELECTRICAL SYSTEM	EMERGENCY LOCATOR TRANSMITTER
WEST VIRGINIA		
ESTIMATED POPULATION	841	892
% STANDARD ERROR	22.2	21.6
% WITH CAPABILITY	78.5	83.2
WISCONSIN		
ESTIMATED POPULATION	4,305	4,480
% STANDARD ERROR	9.6	9.3
% WITH CAPABILITY	81.0	84.2
WYOMING		
ESTIMATED POPULATION	817	822
% STANDARD ERROR	20.8	20.9
% WITH CAPABILITY	85.1	85.7
PUERTO RICO		
ESTIMATED POPULATION	335	294
% STANDARD ERROR	33.7	34.9
% WITH CAPABILITY	96.9	85.1
OTHER U.S. TERRITORIES		
ESTIMATED POPULATION	83	81
% STANDARD ERROR	62.3	63.3
% WITH CAPABILITY	89.7	88.0
TOTAL		
ESTIMATED POPULATION	219,995	210,654
% STANDARD ERROR	0.4	0.4
% WITH CAPABILITY	85.7	82.1

NOTE: COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

7.21 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN UNDER IFR FLIGHT PLANS  
BY TRANSPONDER EQUIPPED AIRCRAFT BY AIRCRAFT TYPE

PAGE 1 OF 2

AIRCRAFT TYPE	ESTIMATED NUMBER AIRCRAFT FLOWN IFR	PERCENT STANDARD ERROR	ESTIMATED PERCENT ACTIVE FLOWN IFR	TOTAL HOURS FLOWN IFR	PERCENT STANDARD ERROR	PERCENT OF TOTAL HOURS	EST. NUMBER FLOWN IFR WITH TRANSPONDER	PERCENT STANDARD ERROR	PERCENT AIRCRAFT FLOWN TRANSPONDER
FIXED WING									
FIXED WING - PISTON									
1 ENG: 1-3 SEATS	4,896	9.7	7.8	115,736	9.7	1.4	942	23.6	19.2
1 ENG: 4+ SEATS	52,288	2.0	48.5	2,298,876	2.0	16.4	2,750	12.6	5.3
1 ENGINE: TOTAL	57,183	2.0	33.6	2,414,612	2.0	10.8	3,693	11.1	6.5
2 ENG: 1-6 SEATS	13,516	2.5	84.9	1,189,557	2.5	43.8	547	26.9	4.0
2 ENG: 7+ SEATS	7,008	2.4	94.3	1,068,599	2.4	55.4	278	31.9	4.0
2 ENGINE: TOTAL	20,524	1.9	87.9	2,258,156	1.7	48.6	825	20.8	4.0
PISTON: OTHER	79	44.7	91.7	2,811	44.7	17.0	61	64.7	77.9
PISTON: TOTAL	77,786	1.6	40.1	4,675,580	1.3	17.5	4,579	9.8	5.9
FIXED WING - TURBOPROP									
2 ENG: 1-12 SEATS	5,060	0.3	100.0	1,322,755	0.3	78.2	129	44.1	2.6
2 ENG: 13+ SEATS	1,357	3.1	100.0	921,436	3.1	70.1	88	79.7	6.5
2 ENGINE: TOTAL	6,417	0.7	100.0	2,244,191	1.3	74.7	218	41.6	3.4
TURBOPROP: OTHER	151	13.2	65.5	35,882	13.2	28.4	0	0.0	0.0
TURBOPROP: TOTAL	6,568	0.7	100.0	2,280,074	1.3	72.8	218	41.6	3.3

7.21 1989 GENERAL AVIATION ACTIVE AIRCRAFT AND TOTAL HOURS FLOWN UNDER IFR FLIGHT PLANS  
BY TRANSPONDER EQUIPPED AIRCRAFT BY AIRCRAFT TYPE

PAGE 2 OF 2

AIRCRAFT TYPE	ESTIMATED NUMBER AIRCRAFT FLOWN IFR	PERCENT STANDARD ERROR	ESTIMATED PERCENT ACTIVE FLOWN IFR	TOTAL HOURS FLOWN IFR	PERCENT STANDARD ERROR	PERCENT OF TOTAL HOURS	EST. NUMBER FLOWN IFR WITH TRANSPONDER	PERCENT STANDARD ERROR	PERCENT AIRCRAFT FLOWN TRANSPONDER
FIXED WING - TURBOJET									
2 ENGINE TURBOJET	4,156	0.4	100.0	1,462,471	0.4	94.8	28	83.8	0.7
TURBOJET: OTHER	457	5.5	100.0	121,113	5.5	100.0	5	87.2	1.2
TURBOJET: TOTAL	4,614	0.7	100.0	1,583,585	0.6	95.7	33	71.5	0.7
FIXED WING: TOTAL	88,968	1.4	43.5	8,539,238	0.8	26.9	4,830	9.5	5.4
ROTORCRAFT									
PISTON	46	14.0	1.4	2,753	14.0	0.4	0	0.0	0.0
TURBINE	353	3.3	8.3	16,959	3.3	0.8	0	0.0	0.0
ROTORCRAFT: TOTAL	400	3.4	5.3	19,712	3.4	0.7	0	0.0	0.0
OTHER	28	88.0	0.4	5,084	88.0	1.2	0	0.0	0.0
TOTAL	89,395	1.4	40.7	8,564,034	0.8	24.5	4,830	9.5	5.4

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

## CHAPTER VIII

### NATIONAL AIRSPACE SYSTEM (NAS) CAPABILITY GROUPS BASED ON AVIONICS

Knowing the estimates of the number of aircraft containing various individual pieces of avionics equipment (the basis for Chapter VII) does not provide enough information to determine an aircraft's overall ability to use the National Airspace System (NAS). In order to obtain a certain capability or privilege, an aircraft may be required to have several pieces of avionics gear. This led to the study of groups of avionics equipment, rather than individual pieces. Two avionics capability group classifications were developed, hierarchical and nonhierarchical. These two group categories provide a framework for the general aviation fleet, relating airborne avionics equipment groups to aircraft capability to perform in the NAS, and facilitating analysis of the activity and characteristics of the general aviation fleet.

This chapter presents two figures and 11 tables on hierarchical and nonhierarchical statistics. Figures 8.1 and 8.2 list the hierarchical and nonhierarchical capability groups, respectively. Tables 8.1-8.5 consider hierarchical capability groups in five different categories, by: aircraft type, age of aircraft, total flight hour groups, primary use, and region of based aircraft, respectively. Tables 8.7-8.11 present nonhierarchical capability groups in the same five categories. The table in between these two groups, Table 8.6, is a comparison between nonhierarchical and hierarchical capability groups.

The hierarchical class consists of avionics groupings which comply with FAA requirements for use in various aspects of the NAS. FAA regulations address three basic capabilities--the capability: (1) to fly in different segments of the airspace, (2) to fly under visual flight rules (VFR) and instrument flight rules (IFR), and (3) to land at different classes of airports. These groups are called hierarchical because, in general, the avionics equipment and associated capabilities for one capability group are a subset of the avionics equipment and associated capabilities for the next higher group, and so on.

The second class of capability groups, nonhierarchical, consists of avionics groupings not required by FAA regulations, but which give an aircraft additional capability in the NAS. The nonhierarchical groups were formed by grouping together component pieces of avionics equipment which, as a whole, form a complete avionics system. A complete avionics system enables an aircraft to make full use of a landing, communications, or navigation system in the NAS.

This year's survey form was revised to capture more concise information regarding transponder equipment than in the past. Respondents were first to indicate if their aircraft had a transponder. Next, they were to indicate if the transponder had automatic altitude reporting capability and/or Mode S capability. Then data on collision avoidance equipment were collected. Finally, respondents were to check a box on the survey if their aircraft had no transponder equipment.

Some observations derived from the tables in this chapter include:

- o The aircraft type increases in sophistication as the level of avionics increases (Tables 8.1 and 8.7).
- o Aircraft in the more sophisticated capability groups are newer aircraft on average than those in less sophisticated capability groups (Tables 8.2 and 8.8).
- o In the case of both hierarchical and nonhierarchical capability groups, aircraft containing more avionics equipment and capabilities are flown more hours on the average than those with smaller investments in avionics equipment (Tables 8.3 and 8.9).
- o In general, the more sophisticated the hierarchical capability groups, the more the predominant uses shift from personal, to business/personal, to corporate/business (Table 8.4).
- o As nonhierarchical capability groups become more sophisticated, the predominant primary uses of the aircraft change from personal, to business/personal, to business/corporate. For example, corporate aircraft alone comprise about 43 percent of the aircraft reporting both a radar altimeter and a complete ILS, yet corporate aircraft compose only 4.4 percent of the general aviation fleet (Table 8.10).

Table 8.6 cross-tabulates the two capability groups and reveals the following about the general aviation fleet:

- o Approximately 28 percent of the general aviation aircraft have avionics equipment enabling them to fly above 18,000 feet in positive controlled airspace.
- o The percent of the general aviation fleet which cannot fly above 12,500 feet due only to avionics limitations has dropped from 56 percent in 1988 to roughly 44 percent in 1989.
- o Table 8.6 indicates that those aircraft in the least sophisticated, nonhierarchical capability groups comprise the bulk of the least sophisticated, hierarchical capability groups. Of the percent of aircraft possessing no nonhierarchical capability group equipment (i.e., no regulatory avionics), approximately 67 percent fall into the hierarchical capability groups 1, 2, and 3. Similarly, those aircraft in the most sophisticated nonhierarchical capability groups are also in the most sophisticated hierarchical capability groups. For example, 87 percent of the aircraft possessing a complete Instrument Landing System (ILS) and a radar altimeter fall into the hierarchical capability group 8.
- o In 1989, LORAN-C, Long Range Navigation equipment (LRNAV) was expanded to include: 1) Visual Flight Rules (VFR) only; 2) Instrument Flight Rules (IFR) navigation; and 3) IFR approach.

These additions have had a strong impact on the reported total number of aircraft with LRNAV equipment. In 1983, only 9,393 aircraft (3.6 percent of the total population) reported any type of Long Range Navigation equipment. In 1986, this number jumped to 47,210 (17.6 percent of the population). In 1987, this number rose to 61,981 (23 percent of the population), and in 1988, the number of aircraft with LRNAV equipment rose yet again to 72,412 (27.9 percent of the population). This year, the number of aircraft with LRNAV equipment rose to 83,855 (31.4 percent of the population). The increases over the last two years most likely reflect both the specific addition of LORAN-C and Omega to the survey form, as well as a rise in the number of aircraft containing LORAN-C receivers.

**Figure 8.1**  
**HIERARCHICAL CAPABILITY GROUPS**

GROUP	AVIONICS	CAPABILITIES
1	No Regulatory Avionics	<p>A. • Up to and including 12,500 feet Mean Sea Level (MSL).</p> <ul style="list-style-type: none"> <li>• Gliders—Up to and including 18,000 feet MSL.</li> <li>• ADF—Colored airways below 12,500 feet MSL.</li> <li>• VOR or RNAV—VOR airways below 12,500 feet MSL.</li> <li>• RNAV—Low Altitude RNAV airways below 12,500 feet MSL.</li> </ul> <p>B. • VFR flight, day and night.</p> <p>C. • Uncontrolled airports.</p>
2	Two-way Communications	<p>A. • Up to and including 12,500 feet MSL.</p> <ul style="list-style-type: none"> <li>• Gliders—Up to and including 18,000 feet MSL.</li> </ul> <p>B. • VFR flight, day and night.</p> <p>C. • Non-TCA controlled airports.</p> <ul style="list-style-type: none"> <li>• Group III TCAs.</li> <li>• Helicopters with 4096 code transponders Group III TCAs.</li> <li>• All Helicopters—Group I and II TCAs below 1,000 feet Above Ground Level (AGL).</li> </ul> <p><b>Note:</b> Air taxis with navigation system and transponder: Group II TCAs.</p> <p>Air taxis with navigation system, transponder and altitude reporting: Group I TCAs and non-positive controlled airspace.</p> <p>Air taxis with navigation system, DME, transponder and altitude reporting: Group I TCAs and positive controlled airspace.</p>
3	Two-way Communications Two Systems—Air Taxis Very High Frequency Omni-Directional Radio Range (VOR) or Automatic Direction Finder (ADF) or Area Navigational Equipment RNAV	<p>A. • Up to and including 12,500 feet MSL.</p> <ul style="list-style-type: none"> <li>• Gliders—Up to and including 18,000 feet MSL.</li> <li>• ADF—Colored airways below 12,500 feet MSL.</li> <li>• VOR or RNAV—VOR airways below 12,500 feet MSL.</li> <li>• RNAV—Low altitude RNAV airways below 12,500 feet MSL.</li> </ul> <p>B. • IFR flight</p> <p>C. • Non-TCA controlled airways.</p> <ul style="list-style-type: none"> <li>• Group III TCAs.</li> <li>• Helicopters with 4096 transponders—Group II TCAs.</li> <li>• All helicopters—Group I and II TCAs below 1,000 feet AGL.</li> </ul>



**Figure 8.1**  
**HIERARCHICAL CAPABILITY GROUPS (Cont.)**

GROUP	AVIONICS	CAPABILITIES
<b>4</b>	Two-way Communications Two Systems—Air Taxis 4096 Code Transponder VOR or RNAV	<ul style="list-style-type: none"> <li>A. • Up to and including 12,500 feet MSL.</li> <li>• Gliders—Up to and including 18,000 feet MSL.</li> <li>• VOR airways below 12,500 feet MSL.</li> <li>• RNAV—Low altitude RNAV airways below 12,500 feet MSL.</li> <li>B. • IFR flight.</li> <li>C. • Non-TCA controlled airports.</li> <li>• Group II TCAs.</li> <li>• Helicopters—Group I TCAs below 1,000 feet AGL.</li> </ul>
<b>5</b>	4096 Code Transponder Altitude Encoding Equipment	<ul style="list-style-type: none"> <li>A. • Non-positive controlled airspace.</li> <li>B. • VFR flight, day and night.</li> <li>C. • Uncontrolled airports.</li> <li>• Group III TCAs.</li> </ul>
<b>6</b>	Two-way Communications 4096 Code Transponder Altitude Encoding Equipment	<ul style="list-style-type: none"> <li>A. • Non-positive controlled airspace.</li> <li>B. • VFR flight, day and night.</li> <li>C. • Non-TCA controlled airports.</li> <li>• Group III TCAs.</li> <li>• Helicopters—Group I TCAs.</li> </ul>
<b>7</b>	Two-way Communications 4096 Code Transponder Altitude Encoding Equipment VOR	<ul style="list-style-type: none"> <li>A. • Non-positive controlled airspace.</li> <li>• VOR airways.</li> <li>B. • IFR flight.</li> <li>C. • Group I TCAs.</li> </ul>
<b>8</b>	Two-way Communications 4096 Code Transponder Altitude Encoding Equipment VOR and/or RNAV Distance Measuring Equipment (DME)	<ul style="list-style-type: none"> <li>A. • Positive controlled airspace.</li> <li>• Jet routes.</li> <li>• RNAV—RNAV routes.</li> <li>B. • IFR flight.</li> <li>C. • Group I TCAs.</li> </ul>

**Figure 8.2**  
**NONHIERARCHICAL CAPABILITY GROUPS**

GROUP	AVIONICS	CAPABILITIES
1	Localizer (LOC)	Partial use of airport Instrument Landing System (ILS).
2	LOC Marker Beacon (MB)	Partial use of airport ILS.
3	LOC MB Glide Slope (GS)	Full use of airport ILS.
4	Long Range Navigation (LRNAV) (LORAN, Omega or other) VFR only, ENF	Area navigation over long distances and large bodies of water.
5	Radar Altimeter (RA)	Determination of altitude above level of terrain.
6	Microwave Landing System (MLS)	More accurate and flexible landing approaches, especially at airports with mountains and large buildings nearby.
7	MLS Instrument Landing System (ILS)	Backup landing systems.
8	LRNAV MLS	Sophisticated navigational and landing capabilities.

8-7

8.1 1989 GENERAL AVIATION AIRCRAFT  
BY AIRCRAFT TYPE AND HIERARCHICAL CAPABILITY GROUPS  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 3

AIRCRAFT TYPE	HIERARCHICAL CAPABILITY GROUPS								TOTAL
	1	2	3	4	5	6	7	8	
2 ENGINES 13+ SEATS	ESTIMATE	0	0	0	88	31	160	36	1,101
	% STD. ERROR	0.0	0.0	0.0	76.6	38.5	35.4	110.4	7.8
	ROW %	0.0	0.0	0.0	6.2	2.2	11.3	2.5	77.8
	COLUMN %	0.0	0.0	0.0	0.3	1.1	1.7	0.1	1.4
TURBOPROP OTHER	ESTIMATE	111	11	13	3	13	41	25	109
	% STD. ERROR	11.9	105.7	99.6	231.2	99.8	36.9	69.1	23.0
	ROW %	34.0	3.4	4.0	0.9	4.0	12.6	7.7	33.4
	COLUMN %	0.4	0.1	0.1	0.0	0.5	0.4	0.0	0.1
FIXED WING - TURBOJET									
2 ENGINES	ESTIMATE	6	0	0	65	88	290	34	3,725
	% STD. ERROR	194.6	0.0	0.0	44.5	36.8	21.8	38.6	2.0
	ROW %	0.1	0.0	0.0	1.5	2.1	6.9	0.8	88.5
	COLUMN %	0.0	0.0	0.0	0.2	3.1	3.1	0.1	4.9
TURBOJET OTHER	ESTIMATE	48	8	0	23	32	26	14	377
	% STD. ERROR	50.5	148.3	0.0	73.1	57.8	16.0	113.3	9.4
	ROW %	9.1	1.5	0.0	4.4	6.1	4.9	2.7	71.5
	COLUMN %	0.2	0.0	0.0	0.1	1.1	0.3	0.0	0.5
ROTORCRAFT									
PISTON	ESTIMATE	0	0	0	0	0	0	0	0
	% STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ROW %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	COLUMN %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TURBINE	ESTIMATE	0	0	0	0	0	0	0	0
	% STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ROW %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	COLUMN %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

8.1 1989 GENERAL AVIATION AIRCRAFT  
BY AIRCRAFT TYPE AND HIERARCHICAL CAPABILITY GROUPS  
(EXCLUDES ROTORCRAFT)

PAGE 3 OF 3

AIRCRAFT TYPE	HIERARCHICAL CAPABILITY GROUPS							
	1	2	3	4	5	6	7	8
OTHER AIRCRAFT	ESTIMATE % STD. ERROR ROW % COLUMN %	5,580 4.4 54.1 28.4	428 23.0 4.2 1.6	56 26.6 0.5 0.2	12 121.5 0.1 0.4	88 52.3 0.9 0.9	102 40.1 1.0 0.2	9 48.8 0.1 0.0
ALL AIRCRAFT	ESTIMATE % STD. ERROR ROW %	29,146 2.9 10.9	25,972 3.5 9.7	32,929 3.2 12.3	2,874 11.2 1.1	9,508 6.2 3.6	60,559 2.2 22.7	76,024 1.5 28.5
								TOTAL
								10,306 0.0 3.9
								267,191

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

HIERARCHICAL CAPABILITY GROUPS KEY

- 1 - NO REGULATORY AVIONICS.
- 2 - TWO-WAY COMMUNICATIONS.
- 3 - TWO-WAY COMMUNICATIONS, TWO SYSTEMS: AIR TAXIS; VOR OR ADF OR RNAV.
- 4 - TWO-WAY COMMUNICATIONS, TWO SYSTEMS: AIR TAXIS; MODE\_S CAPABILITY; VOR OR RNAV.
- 5 - TWO-WAY COMMUNICATIONS, MODE\_S CAPABILITY, ALTITUDE ENCODING EQUIPMENT.
- 6 - TWO-WAY COMMUNICATIONS, MODE\_S CAPABILITY, ALTITUDE ENCODING EQUIPMENT.
- 7 - TWO-WAY COMMUNICATIONS, TWO SYSTEMS: AIR TAXIS; MODE\_S CAPABILITY, ALTITUDE ENCODING EQUIPMENT, VOR.
- 8 - TWO-WAY COMMUNICATIONS, TWO SYSTEMS: AIR TAXIS; MODE\_S CAPABILITY, ALTITUDE ENCODING EQUIPMENT, VOR AND DME OR RNAV.

8.2 1989 GENERAL AVIATION AIRCRAFT  
BY AGE OF AIRCRAFT AND HIERARCHICAL CAPABILITY GROUPS  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 2

AGE OF AIRCRAFT		HIERARCHICAL CAPABILITY GROUPS							TOTAL
		1	2	3	4	5	6	7	8
0 - 4 YEARS	ESTIMATE	2,216	2,925	1,410	1,070	116	352	3,082	5,517
	% STD. ERROR	15.8	14.3	24.7	26.8	47.9	34.4	15.6	7.1
5 - 9 YEARS	ESTIMATE	3,067	2,769	972	1,977	412	1,383	3,785	11,434
	% STD. ERROR	13.4	13.3	29.9	17.1	32.7	19.7	12.3	5.3
10 - 14 YEARS	ESTIMATE	3,612	2,454	2,618	6,480	823	2,836	14,442	24,563
	% STD. ERROR	11.1	13.6	15.0	8.2	22.3	12.3	5.4	3.6
15 - 19 YEARS	ESTIMATE	2,374	1,479	2,603	5,353	433	1,223	7,646	10,277
	% STD. ERROR	14.3	17.0	14.0	9.0	32.8	18.5	7.3	5.8
20 - 24 YEARS	ESTIMATE	2,072	1,232	4,333	7,792	538	1,386	12,546	12,006
	% STD. ERROR	16.4	17.8	10.5	7.6	25.9	16.9	5.7	5.3
25 - 29 YEARS	ESTIMATE	1,661	684	1,952	3,926	251	615	7,296	6,497
	% STD. ERROR	15.8	22.7	14.4	10.4	32.0	25.7	7.9	7.4
30 - 34 YEARS	ESTIMATE	1,436	1,000	2,728	3,145	84	328	5,703	2,974
	% STD. ERROR	15.8	17.5	12.1	11.6	77.1	31.0	8.4	10.9
	ESTIMATE	15.8	17.5	12.1	11.6	77.1	31.0	8.4	10.9
	% STD. ERROR	8.3	5.7	15.7	18.1	0.5	1.9	32.8	17.1
	ESTIMATE	4.9	5.1	10.5	9.6	2.9	3.4	9.4	3.9
	% STD. ERROR								





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HIERARCHICAL CAPABILITY GROUPS KEY

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8.3 1989 GENERAL AVIATION AIRCRAFT  
BY TOTAL FLIGHT HOUR GROUPS AND HIERARCHICAL CAPABILITY GROUPS  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 2

HIERARCHICAL CAPABILITY GROUPS

TOTAL FLIGHT HOUR GROUPS	1	2	3	4	5	6	7	8	TOTAL
1 - 49 HOURS	ESTIMATE % STD. ERROR ROW % COLUMN %	7,674 6.5 11.6 39.0	10,548 6.2 15.9 40.6	12,012 5.9 18.1 36.5	666 24.5 1.0 23.2	1,234 19.0 1.9 13.0	14,751 5.2 22.3 24.4	9,799 6.0 14.8 12.9	66,204 2.1 24.8
50 - 99 HOURS	ESTIMATE % STD. ERROR ROW % COLUMN %	2 74 12.2 5.0 9.5	3,360 9.7 6.0 17.1	5,373 8.6 9.7 20.7	7,230 7.6 13.0 22.0	1,246 18.8 2.2 13.1	17,855 4.7 32.1 29.5	17,280 4.5 31.1 22.7	55,614 2.4 20.8
100 - 149 HOURS	ESTIMATE % STD. ERROR ROW % COLUMN %	1,117 18.7 3.3 3.8	1,500 14.3 4.5 7.6	1,595 15.2 4.8 6.1	3,183 11.4 9.5 9.7	1,192 18.1 3.6 12.5	9,334 6.7 28.0 15.4	15,075 4.8 45.2 19.8	33,370 3.2 12.5
150 - 199 HOURS	ESTIMATE % STD. ERROR ROW % COLUMN %	729 24.5 4.7 2.5	592 22.5 3.8 3.0	650 28.3 4.2 2.5	827 23.7 5.3 2.5	822 22.6 5.3 8.6	4,153 10.5 26.9 6.9	7,568 6.7 49.0 10.0	15,460 5.0 5.8
200 - 249 HOURS	ESTIMATE % STD. ERROR ROW % COLUMN %	832 24.1 6.5 2.9	226 34.9 1.8 1.1	585 26.4 4.6 2.3	1,058 20.4 8.3 3.2	618 24.6 4.9 6.5	2,395 13.3 18.8 4.0	6,862 7.1 53.9 9.0	12,735 5.4 4.8
250 - 299 HOURS	ESTIMATE % STD. ERROR ROW % COLUMN %	566 30.4 7.6 1.9	253 41.1 3.4 1.3	39 85.6 0.5 0.2	588 27.6 7.9 1.8	314 34.3 4.2 3.3	1,984 15.4 26.6 3.3	3,668 9.4 49.2 4.8	7,450 7.2 2.8

8.3 1989 GENERAL AVIATION AIRCRAFT  
BY TOTAL FLIGHT HOUR GROUPS AND HIERARCHICAL CAPABILITY GROUPS  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 2

TOTAL FLIGHT HOUR GROUPS		HIERARCHICAL CAPABILITY GROUPS								TOTAL
		1	2	3	4	5	6	7	8	
300 - 349 HOURS	ESTIMATE	500	249	321	752	96	668	1,212	2,834	6,632
	% STD. ERROR	29.9	34.3	40.4	25.5	62.7	23.2	19.1	10.8	7.6
	ROW %	7.5	3.8	4.8	11.3	1.4	10.1	18.3	42.7	
350 - 399 HOURS	ESTIMATE	354	212	16	405	134	524	878	1,716	4,240
	% STD. ERROR	40.9	46.6	103.1	36.6	54.0	27.3	23.0	13.0	9.6
	ROW %	8.3	5.0	0.4	9.6	3.2	12.4	20.7	40.5	
400 - 449 HOURS	ESTIMATE	159	267	90	370	69	449	717	2,306	4,428
	% STD. ERROR	59.3	42.8	75.6	37.6	53.5	26.0	26.3	11.5	9.1
	ROW %	3.6	6.0	2.0	8.4	1.6	10.1	16.2	52.1	
450+ HOURS	ESTIMATE	974	915	309	1,452	211	1,790	4,004	5,960	15,613
	% STD. ERROR	20.0	21.7	39.4	17.9	37.4	13.2	10.9	6.7	4.6
	ROW %	6.2	5.9	2.0	9.3	1.4	11.5	25.6	38.2	
INACTIVE	ESTIMATE	11,597	4,440	6,659	5,302	235	575	3,211	2,906	34,924
	% STD. ERROR	5.4	9.5	7.4	8.8	40.5	27.7	12.4	10.4	3.0
	ROW %	33.2	12.7	19.1	15.2	0.7	1.6	9.2	8.3	
TOTAL	ESTIMATE	29,146	19,658	25,972	32,929	2,874	9,508	60,559	76,024	267,191
	% STD. ERROR	2.9	3.8	3.5	3.2	11.2	6.2	2.2	1.5	
	ROW %	10.9	7.4	9.7	12.3	1.1	3.6	22.7	28.5	

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

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PAGE 1 OF 2

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8.4 1989 GENERAL AVIATION AIRCRAFT  
BY PRIMARY USE AND HIERARCHICAL CAPABILITY GROUPS  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 2

PRIMARY USE	HIERARCHICAL CAPABILITY GROUPS							
	1	2	3	4	5	6	7	8
OTHER WORK	ESTIMATE	994	39	150	0	171	347	157
	% STD. ERROR	41.1	64.8	49.4	0.0	44.4	34.7	45.1
	ROW %	9.6	1.9	7.3	0.0	8.3	16.9	7.6
COMPUTER AIR CARRIER	COLUMN %	0.7	0.2	0.5	0.0	1.8	0.6	0.2
	ESTIMATE	106	6	198	16	47	57	1,046
	% STD. ERROR	60.4	235.7	43.2	49.4	52.8	57.5	12.4
AIR TAXI	ROW %	6.9	0.4	12.9	1.0	3.1	3.7	68.4
	COLUMN %	0.4	0.0	0.6	0.6	0.5	0.1	1.4
	ESTIMATE	24	770	15	48	3,955	78	784
OTHER USE	% STD. ERROR	87.0	20.8	117.7	72.0	8.5	58.7	19.4
	ROW %	0.4	13.6	0.3	0.8	69.7	1.4	13.8
	COLUMN %	0.1	3.9	0.0	1.7	41.6	0.1	1.0
INACTIVE	ESTIMATE	378	503	490	12	279	736	1,310
	% STD. ERROR	38.5	27.4	28.9	86.0	36.3	25.1	13.2
	ROW %	9.8	13.0	12.7	0.3	7.2	19.0	33.8
TOTAL	COLUMN %	1.3	2.6	1.5	0.4	2.9	1.2	1.7
	ESTIMATE	11,597	4,440	5,302	235	575	3,211	2,906
	% STD. ERROR	5.4	9.5	8.8	40.5	27.7	12.4	10.4
TOTAL	ROW %	33.2	12.7	15.2	0.7	1.6	9.2	8.3
	COLUMN %	39.8	22.6	16.1	8.2	6.0	5.3	3.8
	ESTIMATE	29,146	19,658	32,929	2,874	9,508	60,559	76,024
TOTAL	% STD. ERROR	2.9	3.8	3.2	11.2	6.2	2.2	1.5
	ROW %	10.9	7.4	12.3	1.1	3.6	22.7	28.5
	COLUMN %							

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

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8.5 1989 GENERAL AVIATION AIRCRAFT  
BY REGION OF BASED AIRCRAFT AND HIERARCHICAL CAPABILITY GROUPS  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 2

REGION OF BASED AIRCRAFT	HIERARCHICAL CAPABILITY GROUPS							
	1	2	3	4	5	6	7	8
ALASKAN	ESTIMATE	1,508	3,547	1,924	12	74	737	633
	% STD. ERROR	30.8	9.6	13.6	99.0	66.0	21.2	21.9
	ROW %	3.6	40.5	22.0	0.1	0.8	8.4	7.2
CENTRAL	COLUMN %	1.1	13.7	5.8	0.4	0.8	1.2	0.8
	ESTIMATE	2,469	1,397	2,222	163	419	2,545	3,675
	% STD. ERROR	13.4	16.6	14.3	44.0	28.7	13.1	9.9
EASTERN	ROW %	18.0	10.2	16.2	1.2	3.0	18.5	26.7
	COLUMN %	8.5	5.4	6.7	5.7	4.4	4.2	4.8
	ESTIMATE	3,309	2,295	2,880	275	1,031	7,704	9,470
EUROPEAN OFFICE	% STD. ERROR	10.4	13.9	12.2	35.8	19.4	7.5	6.0
	ROW %	11.6	8.0	10.1	1.0	3.6	26.9	33.1
	COLUMN %	11.4	8.8	8.7	9.6	10.8	12.7	12.5
GREAT LAKES	ESTIMATE	0	0	0	0	0	0	0
	% STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ROW %	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NEW ENGLAND	COLUMN %	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	ESTIMATE	6,823	5,288	5,956	562	1,997	10,483	12,773
	% STD. ERROR	7.6	8.9	8.7	26.4	14.2	6.3	5.1
NEW ENGLAND	ROW %	14.5	11.3	12.7	1.2	4.3	22.3	27.2
	COLUMN %	23.4	20.4	18.1	19.6	21.0	17.3	16.8
	ESTIMATE	880	964	1,211	48	242	3,231	3,147
NEW ENGLAND	% STD. ERROR	20.6	20.4	18.5	87.6	35.8	11.6	11.0
	ROW %	8.4	9.2	11.6	0.5	2.3	31.0	30.2
	COLUMN %	3.0	3.7	3.7	1.7	2.5	5.3	4.1
TOTAL								8,754
								5.8
								3.3
								13,740
								5.4
								5.1
								28,609
								3.5
								10.7
								0
								0.0
								0.0
								0.0
								46,969
								2.7
								17.6
								10,433
								6.1
								3.9



8.5 1989 GENERAL AVIATION AIRCRAFT  
BY REGION OF BASED AIRCRAFT AND HIERARCHICAL CAPABILITY GROUPS  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 2

REGION OF BASED AIRCRAFT		HIERARCHICAL CAPABILITY GROUPS							
		1	2	3	4	5	6	7	8
NORTHWEST MOUNTAIN	ESTIMATE	2,988	2,563	3,252	3,363	289	1,401	6,675	5,795
	% STD. ERROR	11.8	11.5	11.6	11.2	35.9	16.9	8.0	7.9
	ROW %	11.3	9.7	12.4	12.8	1.1	5.3	25.4	22.0
	COLUMN %	10.3	13.0	12.5	10.2	10.1	14.7	11.0	7.6
SOUTHERN	ESTIMATE	3,465	2,888	2,900	6,480	523	1,366	9,802	14,445
	% STD. ERROR	10.8	11.9	12.4	8.1	26.5	16.9	6.5	4.7
	ROW %	8.3	6.9	6.9	15.5	1.2	3.3	23.4	34.5
	COLUMN %	11.9	14.7	11.2	19.7	18.2	14.4	16.2	19.0
SOUTHWESTERN	ESTIMATE	4,641	2,489	2,795	4,845	255	1,403	7,598	10,387
	% STD. ERROR	9.0	12.4	12.5	9.5	34.9	16.2	7.7	5.7
	ROW %	13.5	7.2	8.1	14.1	0.7	4.1	22.1	30.2
	COLUMN %	15.9	12.7	10.8	14.7	8.9	14.8	12.5	13.7
WESTERN-PACIFIC	ESTIMATE	3,803	4,101	3,341	4,000	792	1,817	12,042	15,637
	% STD. ERROR	10.0	9.2	11.1	10.2	22.0	14.7	5.9	4.6
	ROW %	8.4	9.0	7.3	8.8	1.7	4.0	26.4	34.3
	COLUMN %	13.0	20.9	12.9	12.1	27.6	19.1	19.9	20.6
TOTAL	ESTIMATE	29,146	19,658	25,972	32,929	2,874	9,508	60,559	76,024
	% STD. ERROR	2.9	3.8	3.5	3.2	11.2	6.2	2.2	1.5
	ROW %	10.9	7.4	9.7	12.3	1.1	3.6	22.7	28.5
	COLUMN %								

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

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8.6 1989 GENERAL AVIATION AIRCRAFT  
BY NONHIERARCHICAL AND HIERARCHICAL CAPABILITY GROUPS  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 2

NONHIERARCHICAL	HIERARCHICAL CAPABILITY GROUPS								
	1	2	3	4	5	6	7	8	
LOCALIZER	246 39.8 1.9 0.8	91 53.3 0.7 0.5	1,201 17.9 9.3 4.6	3,243 11.4 25.0 9.8	180 45.5 1.4 6.3	127 53.2 1.0 1.3	7,279 7.6 56.1 12.0	602 24.1 4.6 0.8	TOTAL 12,969 5.5 4.9
LOCALIZER, MARKER BEACON	63 65.1 0.5 0.2	52 80.6 0.4 0.3	387 31.1 3.0 1.5	2,503 13.2 19.2 7.6	228 41.1 1.7 7.9	568 25.5 4.4 6.0	3,956 10.3 30.3 6.5	5,289 8.1 40.5 7.0	13,047 5.3 4.9
LOCALIZER, MARKER BEACON, GLIDE SLOPE	130 51.7 0.1 0.4	243 38.7 0.3 1.2	598 26.5 0.6 2.3	9,045 6.7 9.5 27.5	1,287 17.0 1.4 44.8	4,508 9.0 4.8 47.4	26,848 3.6 28.3 44.3	52,245 2.1 55.0 68.7	94,905 1.3 35.5
LOCALIZER, MARKER BEACON, GLIDE SLOPE, RADAR ALTIMETER	16 116.9 0.1 0.1	0 0.0 0.0 0.0	22 103.6 0.1 0.1	459 26.2 2.7 1.4	383 24.0 2.2 13.3	1,003 15.3 5.9 10.5	336 34.1 2.0 0.6	14,823 3.2 87.0 19.5	17,043 3.0 6.4
LONG RANGE NAV. (INCLUDES OMEGA, LORAN-C)	484 32.5 0.6 1.7	1,416 16.4 1.7 7.2	2,609 12.5 3.1 10.0	7,554 7.2 9.0 22.9	1,318 16.2 1.6 45.9	3,595 10.4 4.3 37.8	27,042 3.7 32.2 44.7	39,836 2.4 47.5 52.4	83,855 1.7 31.4
RADAR ALTIMETER	48 78.3 0.3 0.2	6 161.7 0.0 0.0	65 73.7 0.3 0.3	579 23.2 3.1 1.8	420 23.2 2.3 14.6	1,119 14.7 6.0 11.8	437 28.9 2.4 0.7	15,908 3.0 85.6 20.9	18,583 2.8 7.0

8.6 1989 GENERAL AVIATION AIRCRAFT  
BY NONHIERARCHICAL AND HIERARCHICAL CAPABILITY GROUPS  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 2

NONHIERARCHICAL	HIERARCHICAL CAPABILITY GROUPS							
	1	2	3	4	5	6	7	8
MICROWAVE LANDING SYSTEM	62	50	91	32	14	12	185	342
	59.5	96.5	58.4	116.5	79.5	156.0	47.2	27.7
	7.9	6.3	11.5	4.1	1.8	1.5	23.5	43.4
LOCALIZER, MARKER BEACON, GLIDE SLOPE, MICROWAVE LANDING SYSTEM	0.2	0.3	0.4	0.1	0.5	0.1	0.3	0.4
LONG RANGE NAV., MICROWAVE LANDING SYSTEM	0	45	0	3	11	12	36	338
	0.0	105.0	0.0	428.9	59.0	156.0	97.1	27.8
	0.0	10.1	0.0	0.7	2.5	2.7	8.1	75.8
NO REGULATORY AVIONICS	0.0	0.2	0.0	0.0	0.4	0.1	0.1	0.4
ALL AIRCRAFT	28,219	17,937	21,483	14,199	617	2,022	14,448	1,538
	28.1	17.9	21.4	14.1	0.6	2.0	14.4	1.5
	96.8	91.2	82.7	43.1	21.5	21.3	23.9	2.0
TOTAL	29,146	19,658	25,972	32,929	2,874	9,508	60,559	76,024
	2.9	3.8	3.5	3.2	11.2	6.2	2.2	1.5
	10.9	7.4	9.7	12.3	1.1	3.6	22.7	28.5

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8.7 1989 GENERAL AVIATION AIRCRAFT  
BY AIRCRAFT TYPE AND NONHIERARCHICAL CAPABILITY GROUPS  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 3

AIRCRAFT TYPE	NONHIERARCHICAL CAPABILITY GROUPS								NO GROUP	TOTAL
	1	2	3	4	5	6	7	8		
FIXED WING - PISTON										
SINGLE ENGINE 1-3 SEATS	ESTIMATE	1,616	6,499	13,259	105	202	2	17	64,553	87,836
	% STD. ERROR	7.8	8.1	5.3	68.2	40.6	320.2	138.1	1.3	0.0
	ROW %	7.8	1.8	7.4	15.1	0.1	0.2	0.0	73.5	32.9
	COLUMN %	53.2	12.4	6.8	15.8	0.6	25.6	0.4	5.0	64.3
SINGLE ENGINE 4+ SEATS	ESTIMATE	5,607	8,441	69,453	49,993	2,973	118	141	24,583	120,246
	% STD. ERROR	8.1	6.7	1.5	2.1	11.3	60.5	55.0	3.3	0.0
	ROW %	4.7	7.0	57.8	41.6	2.5	0.2	0.1	20.4	45.0
	COLUMN %	43.2	64.7	73.2	59.6	16.0	30.1	26.5	41.5	24.5
TWO ENGINES 1-6 SEATS	ESTIMATE	251	1,688	12,234	9,010	3,104	117	73	654	17,838
	% STD. ERROR	40.3	13.7	2.8	4.3	8.6	57.0	65.6	22.5	0.0
	ROW %	1.4	9.5	68.6	50.5	17.4	0.7	0.4	3.7	6.7
	COLUMN %	1.9	12.9	12.9	10.7	16.7	15.4	26.2	21.5	0.7
TWO ENGINES 7+ SEATS	ESTIMATE	140	495	5,001	3,991	2,748	32	8	314	8,690
	% STD. ERROR	31.7	24.4	4.8	6.4	7.8	46.4	127.0	24.5	0.0
	ROW %	1.6	5.7	57.5	45.9	31.6	0.4	0.1	3.6	3.3
	COLUMN %	1.1	3.8	5.3	4.8	14.8	4.3	7.2	0.3	0.3
PISTON OTHER	ESTIMATE	18	0	94	119	62	0	0	4	194
	% STD. ERROR	38.4	0.0	42.8	33.6	63.9	0.0	0.0	95.0	0.0
	ROW %	9.3	0.0	48.5	61.3	32.0	0.0	0.0	2.1	0.1
	COLUMN %	0.1	0.0	0.1	0.1	0.3	0.0	0.0	0.0	0.0
FIXED WING - TURBOPROP										
2 ENGINES 1-12 SEATS	ESTIMATE	2	427	706	3,078	4,245	66	11	2	5,082
	% STD. ERROR	320.6	22.5	16.2	5.4	2.9	64.2	133.9	320.6	0.0
	ROW %	0.0	8.4	13.9	60.6	83.5	1.3	0.2	0.0	1.9
	COLUMN %	0.0	3.3	0.7	3.7	22.8	8.4	14.8	3.2	0.0

8.7 1989 GENERAL AVIATION AIRCRAFT  
BY AIRCRAFT TYPE AND NONHIERARCHICAL CAPABILITY GROUPS  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 3

NONHIERARCHICAL CAPABILITY GROUPS

AIRCRAFT TYPE	1	2	3	4	5	6	7	8	NO GROUP	TOTAL
2 ENGINES 13+ SEATS	0 0.0 0.0 0.0	64 43.6 4.5 0.5	481 19.6 34.0 0.5	450 14.4 31.8 0.5	915 10.2 64.6 4.9	10 107.0 0.7 1.3	10 107.0 0.7 2.2	7 128.6 0.5 2.1	9 224.1 0.6 0.0	1,416 0.0 0.5
TURBOPROP OTHER	0 0.0 0.0 0.0	0 0.0 0.0 0.0	53 43.6 16.3 0.1	149 15.0 45.7 0.2	129 19.1 39.6 0.7	0 0.0 0.0 0.0	0 0.0 0.0 0.0	0 0.0 0.0 0.0	129 11.7 39.6 0.1	326 0.0 0.1
FIXED WING - TURBOJET										
2 ENGINES	2 133.9 0.0 0.0	278 21.1 6.6 2.1	236 19.0 5.6 0.2	3,328 2.9 79.1 4.0	3,951 1.2 93.9 21.3	86 37.1 2.0 10.9	86 37.1 2.0 19.3	65 42.6 1.5 19.1	9 135.9 0.2 0.0	4,209 0.0 1.6
TURBOJET OTHER	30 75.0 5.7 0.2	30 62.7 5.7 0.2	110 31.9 20.9 0.1	383 9.5 72.7 0.5	318 10.9 60.3 1.7	16 66.1 3.0 2.0	16 66.1 3.0 3.6	16 66.1 3.0 4.7	56 47.0 10.6 0.1	527 0.0 0.2
ROTORCRAFT										
PISTON	N/A N/A N/A N/A	N/A N/A N/A N/A	N/A N/A N/A N/A	N/A N/A N/A N/A	N/A N/A N/A N/A	N/A N/A N/A N/A	N/A N/A N/A N/A	N/A N/A N/A N/A	N/A N/A N/A N/A	N/A N/A N/A N/A
TURBINE	N/A N/A N/A N/A	N/A N/A N/A N/A	N/A N/A N/A N/A	N/A N/A N/A N/A	N/A N/A N/A N/A	N/A N/A N/A N/A	N/A N/A N/A N/A	N/A N/A N/A N/A	N/A N/A N/A N/A	N/A N/A N/A N/A

8.7 1989 GENERAL AVIATION AIRCRAFT  
BY AIRCRAFT TYPE AND NONHIERARCHICAL CAPABILITY GROUPS  
(EXCLUDES ROTORCRAFT)

PAGE 3 OF 3

AIRCRAFT TYPE	NONHIERARCHICAL CAPABILITY GROUPS									
	1	2	3	4	5	6	7	8	NO GROUP	TOTAL
OTHER AIRCRAFT	24	7	39	95	32	16	0	4	10,149	10,306
	63.4	153.4	85.2	38.5	102.1	125.7	0.0	263.5	0.5	0.0
	0.2	0.1	0.4	0.9	0.3	0.2	0.0	0.0	98.5	
ALL AIRCRAFT	0.2	0.1	0.0	0.1	0.2	2.0	0.0	1.2	10.1	3.9
	12,969	13,047	94,905	83,855	18,583	788	446	340	100,463	267,191
	5.5	5.3	1.3	1.7	2.8	20.0	25.4	29.8	1.2	
	4.9	4.9	35.5	31.4	7.0	0.3	0.2	0.1	37.6	

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.



NONHIERARCHICAL CAPABILITY GROUPS KEY

- 1 - LOCALIZER (LOC).
  - 2 - LOCALIZER, MARKER BEACON (MB).
  - 3 - LOCALIZER, MARKER BEACON, GLIDE SLOPE (GS).
  - 4 - LONG RANGE NAVIGATION (LRNAV) - INCLUDES LORAN, VFR ONLY; IFR NAVIGATION; IFR APPROACH AND OMEGA.
  - 5 - RADAR ALTIMETER (RA).
  - 6 - MICROWAVE LANDING SYSTEM (MLS).
  - 7 - LOC, MB, GS, MLS.
  - 8 - LRNAV, MLS.
- NO GROUP - NO REGULATORY AVIONICS.

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

8.8 1989 GENERAL AVIATION AIRCRAFT  
BY AGE OF AIRCRAFT AND NONHIERARCHICAL CAPABILITY GROUPS  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 2

AGE OF AIRCRAFT	NONHIERARCHICAL CAPABILITY GROUPS								NO GROUP	TOTAL	
	1	2	3	4	5	6	7	8			
0 - 4 YEARS	ESTIMATE	1,057	559	4,814	6,851	2,371	112	92	63	6,941	16,686
	% STD. ERROR	29.0	28.4	10.0	8.4	8.9	43.0	42.9	51.0	8.9	5.0
	ROW %	6.3	3.4	28.9	41.1	14.2	0.7	0.6	0.4	41.6	6.2
5 - 9 YEARS	COLUMN %	8.2	4.3	5.1	8.2	12.8	14.2	20.6	18.5	6.9	
	ESTIMATE	961	1,464	9,822	8,890	4,661	75	32	13	8,650	25,798
	% STD. ERROR	23.5	19.2	6.5	6.4	6.6	58.5	89.2	94.5	7.7	3.9
10 - 14 YEARS	ROW %	3.7	5.7	38.1	34.5	18.1	0.3	0.1	0.1	33.5	
	COLUMN %	7.4	11.2	10.3	10.6	25.1	9.5	7.2	3.8	8.6	9.7
	ESTIMATE	3,081	2,585	29,641	22,337	6,113	236	230	144	13,586	57,827
15 - 19 YEARS	% STD. ERROR	13.2	12.9	3.3	4.0	6.6	37.0	37.7	44.8	5.6	2.3
	ROW %	5.3	4.5	51.3	38.6	10.6	0.4	0.4	0.2	23.5	
	COLUMN %	23.8	19.8	31.2	26.6	32.9	29.9	51.6	42.4	13.5	21.6
20 - 24 YEARS	ESTIMATE	1,313	1,877	14,270	10,782	2,119	79	20	50	10,374	31,388
	% STD. ERROR	17.2	14.4	5.1	5.9	11.3	67.7	134.1	93.8	6.6	3.4
	ROW %	4.2	6.0	45.5	34.4	6.8	0.3	0.1	0.2	33.1	
25 - 29 YEARS	COLUMN %	10.1	14.4	15.0	12.9	11.4	10.0	4.5	14.7	10.3	11.7
	ESTIMATE	2,262	3,195	17,423	14,862	2,010	180	100	89	13,257	41,904
	% STD. ERROR	14.2	11.5	4.5	5.0	11.0	51.0	63.6	64.8	5.7	2.8
30 - 34 YEARS	ROW %	5.4	7.6	41.6	35.5	4.8	0.4	0.2	0.2	31.6	
	COLUMN %	17.4	24.5	18.4	17.7	10.8	22.8	22.4	26.2	13.2	15.7
	ESTIMATE	1,462	1,471	9,896	8,207	640	2	0	0	7,724	22,881
35 - 39 YEARS	% STD. ERROR	18.4	17.0	6.0	6.9	24.8	290.6	0.0	0.0	7.4	4.0
	ROW %	6.4	6.4	43.2	35.9	2.8	0.0	0.0	0.0	33.8	
	COLUMN %	11.3	11.3	10.4	9.8	3.4	0.3	0.0	0.0	7.7	8.6
40 - 44 YEARS	ESTIMATE	1,052	1,246	5,422	4,834	341	35	4	0	7,696	17,398
	% STD. ERROR	20.0	18.5	8.3	9.0	28.6	106.7	177.6	0.0	6.6	4.1
	ROW %	6.0	7.2	31.2	27.8	2.0	0.2	0.0	0.0	44.2	
45 - 49 YEARS	COLUMN %	8.1	9.6	5.7	5.8	1.8	4.4	0.9	0.0	7.7	6.5

8.8 1989 GENERAL AVIATION AIRCRAFT  
BY AGE OF AIRCRAFT AND NONHIERARCHICAL CAPABILITY GROUPS  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 2

AGE OF AIRCRAFT	NONHIERARCHICAL CAPABILITY GROUPS									
	1	2	3	4	5	6	7	8	NO GROUP	TOTAL
35+ YEARS										
ESTIMATE	1,968	849	3,888	6,747	148	149	33	23	32,282	42,787
% STD. ERROR	11.4	18.1	8.2	6.6	21.3	38.3	32.1	110.7	1.9	1.5
ROW %	4.6	2.0	9.1	15.8	0.3	0.3	0.1	0.1	75.4	
COLUMN %	15.2	6.5	4.1	8.0	0.8	18.9	7.4	6.8	32.1	16.0
TOTAL	12,969	13,047	94,905	83,855	18,583	788	446	340	100,463	267,191
ESTIMATE	5.5	5.3	1.3	1.7	2.8	20.0	25.4	29.8	1.2	
% STD. ERROR	4.9	4.9	35.5	31.4	7.0	0.3	0.2	0.1	37.6	

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

NONHIERARCHICAL CAPABILITY GROUPS KEY

- 1 - LOCALIZER (LOC).
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  - 8 - LRNAV, MLS.
- NO GROUP - NO REGULATORY AVIONICS.

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

8.9 1989 GENERAL AVIATION AIRCRAFT  
BY TOTAL FLIGHT HOUR GROUPS AND NONHIERARCHICAL CAPABILITY GROUPS  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 2

NONHIERARCHICAL CAPABILITY GROUPS

TOTAL FLIGHT HOUR GROUPS		1	2	3	4	5	6	7	8	NO GROUP	TOTAL
1 - 49 HOURS	ESTIMATE	3,557	3,111	15,438	14,562	961	143	9	39	37,541	66,204
	% STD. ERROR	10.8	11.6	4.8	5.1	17.7	54.6	133.5	103.8	2.9	2.1
	ROW %	5.4	4.7	23.3	22.0	1.5	0.2	0.0	0.1	56.7	24.8
50 - 99 HOURS	ESTIMATE	2,623	3,160	24,073	20,485	2,448	176	121	82	18,084	55,614
	% STD. ERROR	12.9	11.4	3.8	4.3	11.5	46.8	60.9	72.8	4.5	2.4
	ROW %	4.7	5.7	43.3	36.8	4.4	0.3	0.2	0.1	32.5	20.8
100 - 149 HOURS	ESTIMATE	1,501	1,933	18,829	16,700	2,257	83	31	68	6,515	33,370
	% STD. ERROR	17.1	14.4	4.4	4.7	11.6	66.3	85.9	73.6	7.5	3.2
	ROW %	4.5	5.8	56.4	50.0	6.8	0.2	0.1	0.2	19.5	12.5
150 - 199 HOURS	ESTIMATE	915	868	8,451	7,700	1,538	74	67	8	2,526	15,460
	% STD. ERROR	22.5	20.4	6.8	7.1	13.0	71.5	76.2	175.6	13.2	5.0
	ROW %	5.9	5.6	54.7	49.8	9.9	0.5	0.4	0.1	16.3	5.8
200 - 249 HOURS	ESTIMATE	434	728	7,071	6,759	1,814	47	47	16	2,232	12,735
	% STD. ERROR	30.7	23.2	7.4	7.3	10.7	59.3	59.3	82.0	14.1	5.4
	ROW %	3.4	5.7	55.5	53.1	14.2	0.4	0.4	0.1	17.5	4.8
250 - 299 HOURS	ESTIMATE	135	414	3,833	3,642	1,408	4	4	0	1,489	7,450
	% STD. ERROR	53.7	28.9	10.2	10.0	13.1	158.4	158.4	0.0	18.2	7.2
	ROW %	1.8	5.6	51.4	48.9	18.9	0.1	0.1	0.0	20.0	2.8
	ESTIMATE	1.0	3.2	4.0	4.3	7.6	0.5	0.9	0.0	1.5	2.8
	% STD. ERROR										
	ROW %										

8.9 1989 GENERAL AVIATION AIRCRAFT  
BY TOTAL FLIGHT HOUR GROUPS AND NONHIERARCHICAL CAPABILITY GROUPS  
(EXCLUDES ROTORCRAFT)

PAGE 2 OF 2

TOTAL FLIGHT HOUR GROUPS		NONHIERARCHICAL CAPABILITY GROUPS								NO GROUP	TOTAL
		1	2	3	4	5	6	7	8		
300 - 349 HOURS	ESTIMATE	476	423	2,925	2,800	1,331	29	29	29	1,431	6,632
	% STD. ERROR	33.2	30.9	11.7	10.9	13.1	82.2	82.2	82.2	17.7	7.6
	ROW %	7.2	6.4	44.1	42.2	20.1	0.4	0.4	0.4	21.6	2.5
350 - 399 HOURS	ESTIMATE	297	178	1,545	1,719	1,167	19	19	19	1,004	4,240
	% STD. ERROR	37.4	47.9	16.6	13.3	13.9	65.6	65.6	65.6	23.0	9.6
	ROW %	7.0	4.2	36.4	40.5	27.5	0.4	0.4	0.4	23.7	1.6
400 - 449 HOURS	ESTIMATE	212	381	1,432	1,823	1,382	3	3	2	960	4,428
	% STD. ERROR	45.8	29.2	17.1	12.5	12.2	139.8	139.8	173.5	23.3	9.1
	ROW %	4.8	8.6	32.3	41.2	31.2	0.1	0.1	0.0	21.7	1.7
450+ HOURS	ESTIMATE	1,349	480	6,303	4,157	3,371	103	68	40	3,865	15,613
	% STD. ERROR	18.2	27.9	7.7	7.9	6.9	47.8	55.2	62.3	10.7	4.6
	ROW %	8.6	3.1	40.4	26.6	21.6	0.7	0.4	0.3	24.8	5.8
INACTIVE	ESTIMATE	1,532	1,276	5,118	3,300	785	128	61	44	24,752	34,924
	% STD. ERROR	16.4	17.8	8.7	11.2	18.8	45.8	64.3	87.4	3.6	3.0
	ROW %	4.4	3.7	14.7	9.4	2.2	0.4	0.2	0.1	70.9	13.1
TOTAL	ESTIMATE	12,969	13,047	94,905	83,855	18,583	788	446	340	100,463	267,191
	% STD. ERROR	5.5	5.3	1.3	1.7	2.8	20.0	25.4	29.8	1.2	1.2
	ROW %	4.9	4.9	35.5	31.4	7.0	0.3	0.2	0.1	37.6	3.0

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

NONHIERARCHICAL CAPABILITY GROUPS KEY

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- 6 - MICROWAVE LANDING SYSTEM (MLS) .
- 7 - LOC, MB, GS, MLS.
- 8 - LRNAV, MLS.
- NO GROUP - NO REGULATORY AVIONICS.

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

8.10 1989 GENERAL AVIATION AIRCRAFT  
BY PRIMARY USE AND NONHIERARCHICAL CAPABILITY GROUPS  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 2

PRIMARY USE	NONHIERARCHICAL CAPABILITY GROUPS									
	1	2	3	4	5	6	7	8	NO GROUP	TOTAL
CORPORATE	ESTIMATE	812	3,100	7,400	7,985	192	188	78	147	11,862
	% STD. ERROR	90.9	17.9	10.4	4.8	34.9	35.1	37.5	49.9	3.8
	ROW %	0.3	6.8	26.1	62.4	1.6	1.6	0.7	1.2	
BUSINESS	COLUMN %	0.2	6.2	3.3	8.8	24.4	42.2	22.9	0.1	4.4
	ESTIMATE	1,089	2,639	23,861	18,965	4,198	40	40	4,490	37,821
	% STD. ERROR	18.6	12.0	3.6	4.1	8.4	71.0	71.1	9.2	2.7
PERSONAL	ROW %	2.9	7.0	63.1	50.1	11.1	0.1	0.1	11.9	
	COLUMN %	8.4	20.2	25.1	22.6	22.6	9.0	11.8	4.5	14.2
INSTRUCTIONAL	ESTIMATE	7,192	6,820	47,742	44,649	2,662	89	164	54,033	130,813
	% STD. ERROR	7.7	7.8	2.4	2.7	11.2	67.7	52.3	2.0	1.0
	ROW %	5.5	5.2	36.5	34.1	2.0	0.1	0.1	41.3	
AERIAL APPLICATION	COLUMN %	55.5	52.3	50.3	53.2	14.3	20.0	48.2	53.8	49.0
	ESTIMATE	2,353	760	7,160	2,850	249	2	2	6,633	17,609
	% STD. ERROR	13.9	23.6	7.6	12.1	32.4	224.7	224.7	8.0	4.6
AERIAL OBSERVATION	ROW %	13.4	4.3	40.7	16.2	1.4	0.0	0.0	37.7	
	COLUMN %	18.1	5.8	7.5	3.4	1.3	0.4	0.6	6.6	
AERIAL APPLICATION	ESTIMATE	189	2	362	408	8	1	1	5,783	6,505
	% STD. ERROR	48.3	89.2	32.1	33.1	314.8	833.5	833.5	4.0	3.7
	ROW %	2.9	0.0	5.6	6.3	0.1	0.0	0.0	88.9	
AERIAL OBSERVATION	COLUMN %	1.5	0.0	0.4	0.5	0.0	0.2	0.3	5.8	2.4
	ESTIMATE	278	221	1,976	2,146	155	0	0	1,592	4,808
	% STD. ERROR	38.5	41.1	14.4	13.4	39.4	0.0	0.0	14.4	8.7
AERIAL OBSERVATION	ROW %	5.8	4.6	41.1	44.6	3.2	0.0	0.0	33.1	
	COLUMN %	2.1	1.7	2.1	2.6	0.8	0.0	0.0	1.6	1.8



**8.10 1989 GENERAL AVIATION AIRCRAFT  
BY PRIMARY USE AND NONHIERARCHICAL CAPABILITY GROUPS  
(EXCLUDES ROTORCRAFT)**

PAGE 2 OF 2

PRIMARY USE	NONHIERARCHICAL CAPABILITY GROUPS									
	1	2	3	4	5	6	7	8	NO GROUP	TOTAL
OTHER WORK	ESTIMATE	4	300	201	62	4	0	0	1,549	2,054
	% STD. ERROR	207.5	35.6	43.3	72.8	228.9	0.0	0.0	14.7	12.8
	ROW %	0.2	14.6	9.8	3.0	0.2	0.0	0.0	75.4	
COMMUTER AIR CARRIER	ESTIMATE	69	853	178	433	0	0	0	151	1,530
	% STD. ERROR	58.7	16.5	35.9	19.6	0.0	0.0	0.0	47.5	11.4
	ROW %	4.5	55.8	11.6	28.3	0.0	0.0	0.0	9.9	
AIR TAXI	ESTIMATE	242	3,558	2,276	1,353	61	58	3	312	5,675
	% STD. ERROR	33.5	9.1	11.5	13.5	87.3	90.9	249.6	32.8	6.9
	ROW %	4.3	62.7	40.1	23.8	1.1	1.0	0.1	5.5	
OTHER USE	ESTIMATE	141	1,239	1,483	621	20	20	16	1,316	3,871
	% STD. ERROR	59.8	16.8	16.3	17.7	89.2	89.2	105.8	16.6	9.4
	ROW %	3.6	32.0	38.3	16.0	0.5	0.5	0.4	34.0	
INACTIVE	ESTIMATE	1,532	5,118	3,300	785	128	61	44	24,752	34,924
	% STD. ERROR	16.4	17.8	11.2	18.8	45.8	64.3	87.4	3.6	3.0
	ROW %	4.4	3.7	9.4	2.2	0.4	0.2	0.1	70.9	
TOTAL	ESTIMATE	12,969	13,047	94,905	83,855	788	446	340	100,463	267,191
	% STD. ERROR	5.5	5.3	1.3	1.7	20.0	25.4	29.8	1.2	
	ROW %	4.9	4.9	35.5	31.4	0.3	0.2	0.1	37.6	

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

NONHIERARCHICAL CAPABILITY GROUPS KEY

- 1 - LOCALIZER (LOC).
  - 2 - LOCALIZER, MARKER BEACON (MB).
  - 3 - LOCALIZER, MARKER BEACON, GLIDE SLOPE (GS).
  - 4 - LONG RANGE NAVIGATION (LRNAV) - INCLUDES LORAN, VFR ONLY; IFR NAVIGATION; IFR APPROACH AND OMEGA.
  - 5 - RADAR ALTIMETER (RA).
  - 6 - MICROWAVE LANDING SYSTEM (MLS).
  - 7 - LOC, MB, GS, MLS.
  - 8 - LRNAV, MLS.
- NO GROUP - NO REGULATORY AVIONICS.

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

8.11 1989 GENERAL AVIATION AIRCRAFT  
BY REGION OF BASED AIRCRAFT AND NONHIERARCHICAL CAPABILITY GROUPS  
(EXCLUDES ROTORCRAFT)

PAGE 1 OF 2

REGION OF BASED AIRCRAFT	NONHIERARCHICAL CAPABILITY GROUPS								NO GROUP	TOTAL
	1	2	3	4	5	6	7	8		
ALASKAN	ESTIMATE	223	1,170	2,928	162	1	1	1	5,063	8,754
	% STD. ERROR	48.0	16.3	10.5	45.3	428.2	428.2	428.2	7.8	5.8
	ROW %	2.5	13.4	33.4	1.9	0.0	0.0	0.0	57.8	
CENTRAL	COLUMN %	1.7	1.2	3.5	0.9	0.1	0.2	0.3	5.9	3.3
	ESTIMATE	563	4,407	3,686	1,056	28	9	9	6,367	13,740
	% STD. ERROR	27.4	9.7	10.2	14.0	91.0	106.4	106.4	8.1	5.4
EASTERN	ROW %	4.1	32.1	26.8	7.7	0.2	0.1	0.1	46.3	
	COLUMN %	4.3	4.6	4.4	5.7	3.6	2.0	2.6	6.3	5.1
	ESTIMATE	1,721	11,496	10,525	2,758	115	92	58	9,267	28,609
GREAT LAKES	% STD. ERROR	15.8	5.8	6.0	9.8	40.4	42.9	52.7	6.4	3.5
	ROW %	6.0	40.2	36.8	9.6	0.4	0.3	0.2	32.4	
	COLUMN %	13.2	12.1	12.6	14.8	14.6	20.6	17.1	9.2	10.7
NEW ENGLAND	ESTIMATE	2,461	15,997	15,213	3,626	133	66	55	20,391	46,969
	% STD. ERROR	12.9	4.9	5.0	8.3	52.2	75.9	80.8	4.3	2.7
	ROW %	5.2	34.1	32.4	7.7	0.3	0.1	0.1	43.4	
	COLUMN %	18.9	16.9	18.1	19.5	16.0	14.8	16.2	20.3	17.6
	ESTIMATE	627	4,281	4,270	476	103	17	47	3,279	10,433
	% STD. ERROR	25.5	9.7	9.6	21.4	65.5	107.4	89.4	10.9	6.1
	ROW %	6.0	41.0	40.9	4.6	1.0	0.2	0.5	31.4	
	COLUMN %	4.8	4.5	5.1	2.6	13.1	3.8	13.8	3.3	3.9

**8.11 1989 GENERAL AVIATION AIRCRAFT  
BY REGION OF BASED AIRCRAFT AND NONHIERARCHICAL CAPABILITY GROUPS  
(EXCLUDES ROTORCRAFT)**

PAGE 2 OF 2

REGION OF BASED AIRCRAFT	NONHIERARCHICAL CAPABILITY GROUPS								NO GROUP	TOTAL
	1	2	3	4	5	6	7	8		
NORTHWEST MOUNTAIN	ESTIMATE	1,051	1,224	8,597	7,462	1,239	75	56	49	12,474
	% STD. ERROR	20.0	18.1	6.7	7.2	14.8	66.1	74.3	85.4	5.6
	ROW %	4.0	4.6	32.7	28.3	4.7	0.3	0.2	0.2	47.4
SOUTHERN	COLUMN %	8.1	9.4	9.1	8.9	6.7	9.5	12.6	14.4	12.4
	ESTIMATE	2,737	2,199	17,085	17,478	3,762	97	95	97	12,674
	% STD. ERROR	12.8	13.3	4.6	4.5	7.6	59.2	60.1	59.2	5.7
SOUTHWESTERN	ROW %	6.5	5.3	40.8	41.7	9.0	0.2	0.2	0.2	30.3
	COLUMN %	21.1	16.9	18.0	20.8	20.2	12.3	21.3	28.5	12.6
	ESTIMATE	2,041	1,408	13,158	10,152	2,724	104	46	2	13,405
WESTERN-PACIFIC	% STD. ERROR	14.7	15.9	5.3	6.1	9.7	62.7	103.9	313.8	5.4
	ROW %	5.9	4.1	38.2	29.5	7.9	0.3	0.1	0.0	39.0
	COLUMN %	15.7	10.8	13.9	12.1	14.7	13.2	10.3	0.6	13.3
TOTAL	ESTIMATE	1,922	2,579	18,938	12,616	2,810	109	39	22	17,079
	% STD. ERROR	14.8	12.2	4.4	5.4	9.8	47.5	65.2	115.6	4.7
	ROW %	4.2	5.7	41.6	27.7	6.2	0.2	0.1	0.0	37.5
TOTAL	COLUMN %	14.8	19.8	20.0	15.0	15.1	13.8	8.7	6.5	17.0
	ESTIMATE	12,969	13,047	94,905	83,855	18,583	788	446	340	100,463
	% STD. ERROR	5.5	5.3	1.3	1.7	2.8	20.0	25.4	29.8	1.2
	ROW %	4.9	4.9	35.5	31.4	7.0	0.3	0.2	0.1	37.6

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

NONHIERARCHICAL CAPABILITY GROUPS KEY

- 1 - LOCALIZER (LOC).
  - 2 - LOCALIZER, MARKER BEACON (MB).
  - 3 - LOCALIZER, MARKER BEACON, GLIDE SLOPE (GS).
  - 4 - LONG RANGE NAVIGATION (LRNAV) - INCLUDES LORAN, VFR ONLY; IFR NAVIGATION; IFR APPROACH AND OMEGA.
  - 5 - RADAR ALTIMETER (RA).
  - 6 - MICROWAVE LANDING SYSTEM (MLS).
  - 7 - LOC, MB, GS, MLS.
  - 8 - LRNAV, MLS.
- NO GROUP - NO REGULATORY AVIONICS.

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

## CHAPTER IX

### 1989 ROTORCRAFT ACTIVITY SURVEY

#### 1. INTRODUCTION

The 1989 Rotorcraft Activity Survey is the first ever census of the more than 10,000 registered rotorcraft in the United States. This chapter presents the 1989 Rotorcraft Activity Survey results which provide the FAA with valuable information about the activities of the rotorcraft fleet. The information obtained from this survey enables the FAA to monitor the rotorcraft fleet so that FAA can, among other activities, anticipate and meet demand for National Airspace System (NAS) facilities and services, assess the impact of regulatory changes on the rotorcraft fleet, and implement measures to assure the safe operation of rotorcraft in the airspace.

For the purposes of this rotorcraft survey, the term, "rotorcraft," refers to aircraft that use rotating wings (blades) to move through the air. In this chapter, rotorcraft are considered in two aircraft groups, manufacturer built and amateur built. The manufacturer built rotorcraft are further divided into piston, and single engine and multiengine turbine rotorcraft. The rotorcraft surveyed, therefore, range in complexity from simple, amateur built rotorcraft, to the more sophisticated manufacturer built multiengine, turbine-powered rotorcraft. These rotorcraft are used for a variety of purposes such as air taxi, commuter, personal, corporate/business, instructional, and emergency medical service--to name a few.

Also provided in this chapter is information on rotorcraft used for law enforcement purposes and public use activities.

The rotorcraft survey questionnaire was mailed to every U.S. registered rotorcraft owner in three mailings and to rotorcraft operators in the first two mailings. More than 64 percent of the rotorcraft owners/operators responded to the census. Rotorcraft data, therefore, were collected for every state and FAA region, as well as all of the major manufacturer/model groups of rotorcraft. A detailed description of the survey methodology is provided in Appendix B of this report.

This chapter is divided into seven sections. Each section contains its corresponding tables and figures, which follow each section's text. The figures are presented first, with the tables following the figures. Altogether, 15 figures and 39 tables of data on rotorcraft are presented in this chapter.

Following are some of the significant rotorcraft survey findings for 1989:

#### GENERAL

- o More than 2.8 million hours were flown by the 7,488 active rotorcraft in the U.S. fleet during 1989.

- o The average flight time per active rotorcraft was 390 hours, almost two and a half times the average flight time of the 1989 general aviation fixed wing fleet (158 hours).
- o Active rotorcraft comprised approximately 72 percent of the registered rotorcraft fleet.
- o During 1989, the rotorcraft fleet made almost 7.4 million landings.
- o The total airframe hours for the active rotorcraft population is 31.4 million hours.
- o The active rotorcraft population has an average of approximately 4,191 lifetime airframe hours.

#### GEOGRAPHIC

- o The three regions with the greatest number of active rotorcraft are: the Western-Pacific with 1,458; the Southwestern with 1,413; and the Southern with 1,223.
- o The state with the largest estimated number of active rotorcraft is California with 1,072 active rotorcraft. The next top two states are Louisiana with 645 and Florida with 635 active rotorcraft.
- o The three regions with the greatest number of landings are: Southwestern with nearly 2 million landings; Western-Pacific with 1.7 million; and Eastern with more than 951,000 landings.

#### ROTORCRAFT TYPE AND PRIMARY USE

- o Air taxi is the most popular primary use of the active rotorcraft fleet. Almost 18 percent are primarily used in this category. The second and third most popular primary uses are aerial observation and personal - 17 percent and 14 percent, respectively.
- o Single engine turbine rotorcraft flew more than 54 percent of the total hours flown.
- o Multiengine turbine rotorcraft averaged the most hours flown per rotorcraft, with 552 average hours. The single engine turbine rotorcraft followed closely with an average of 481 average hours.
- o Although piston rotorcraft represent the greatest population, they do not have the highest total airframe hours. Single engine turbine rotorcraft have both the highest total airframe hours and average airframe hours, with 16.0 million total airframe hours and 4,934 average airframe hours.

#### LAW ENFORCEMENT AND PUBLIC USE ROTORCRAFT

- o Law enforcement rotorcraft comprise 8.2 percent of the active rotorcraft fleet, and public use rotorcraft comprise 9.6 percent of the active rotorcraft fleet.
- o Aerial observation is the most frequent primary use of law enforcement rotorcraft, with 68 percent of the law enforcement rotorcraft used primarily for this purpose.
- o Aerial observation is also the most frequent primary use of public use rotorcraft, with 50 percent of the public use rotorcraft used primarily for this purpose.



## 2. COMMON GENERAL AVIATION ACTIVITY MEASURES

Several aviation activity measures are used to indicate growth trends and activity levels in the rotorcraft fleet. Some common aviation activity measures of interest are the number of active rotorcraft (flew one or more hours during the year), the total hours flown, and average annual hours flown per rotorcraft.

This section presents four tables and three figures on these common aviation activity measures. Tables 9.1-9.4 give estimates of the rotorcraft population size, number of active rotorcraft, total flight hours and average annual flight hours in four different ways, by: 1) Rotorcraft Type; 2) Service Difficulty Reporting (SDR) Rotorcraft Manufacturer/Model Group; 3) Region of Based Rotorcraft; and 4) State of Based Rotorcraft.

To visualize the data presented in Tables 9.1-9.4, three figures are included in this section. Figures 9.1, 9.2 and 9.3 show, by rotorcraft type, the number of active versus registered rotorcraft, total flight hours, and average annual flight hours, respectively.

Table 9.2 breaks down the number of estimated active aircraft and their respective average annual flight hour estimates by Service Difficulty Reporting (SDR) Rotorcraft Manufacturer/Model Group. The four "Other" categories listed in the beginning of Table 9.2 refer to all the rotorcraft which belong to a manufacturer's/model group that has less than 20 rotorcraft.

The different "Other" categories represent:

- 1 Manufactured Piston.
- 2 Manufactured Single Engine Turbine Rotorcraft.
- 3 Manufactured Multiengine Turbine Rotorcraft.
- 4 Amateur Built Rotorcraft.

On a national level, the results of the 1989 Rotorcraft Activity Survey revealed that:

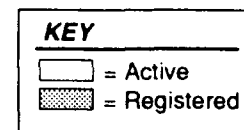
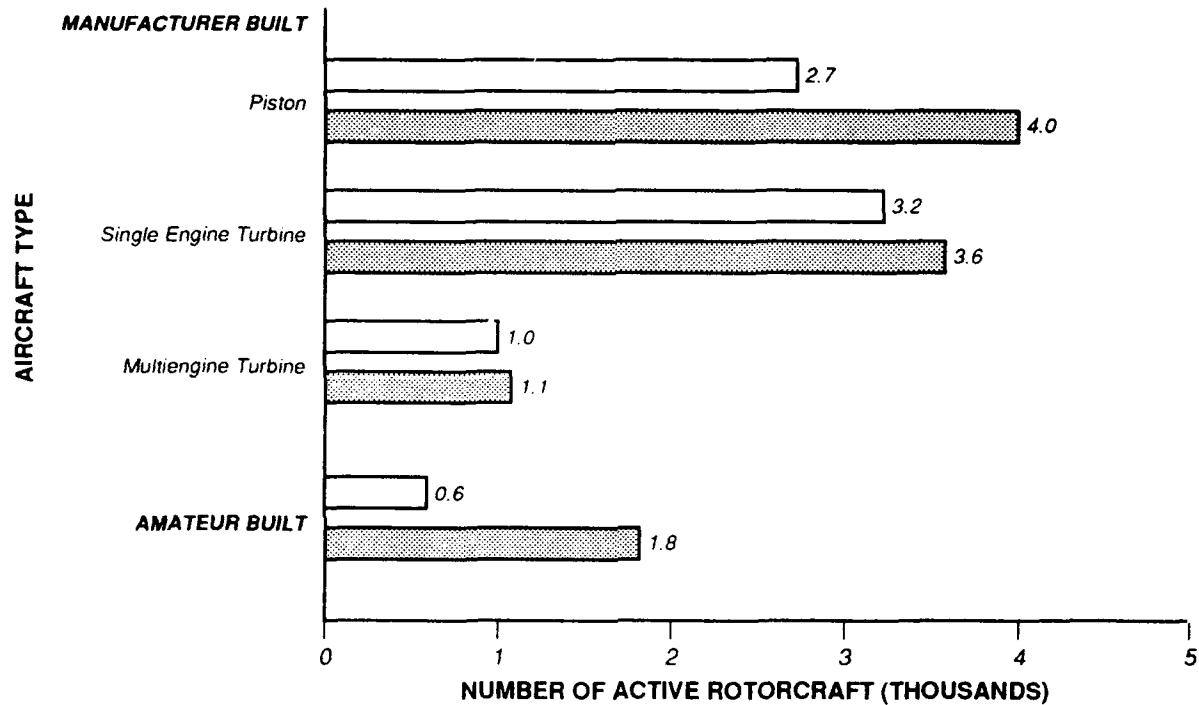
- o More than 2.8 million hours were flown by the 7,488 active rotorcraft in the U.S. fleet during 1989.
- o The average annual flight time per active rotorcraft was 390 hours, almost two and a half times the average flight time of the 1989 general aviation fixed wing fleet (158 hours).
- o Active rotorcraft comprised approximately 72 percent of the registered rotorcraft fleet.

The following observations can be derived from Tables 9.1 through 9.4:

- o There is a great deal of variation in the total number of hours flown, number of active aircraft, and average hours flown among all types of rotorcraft.

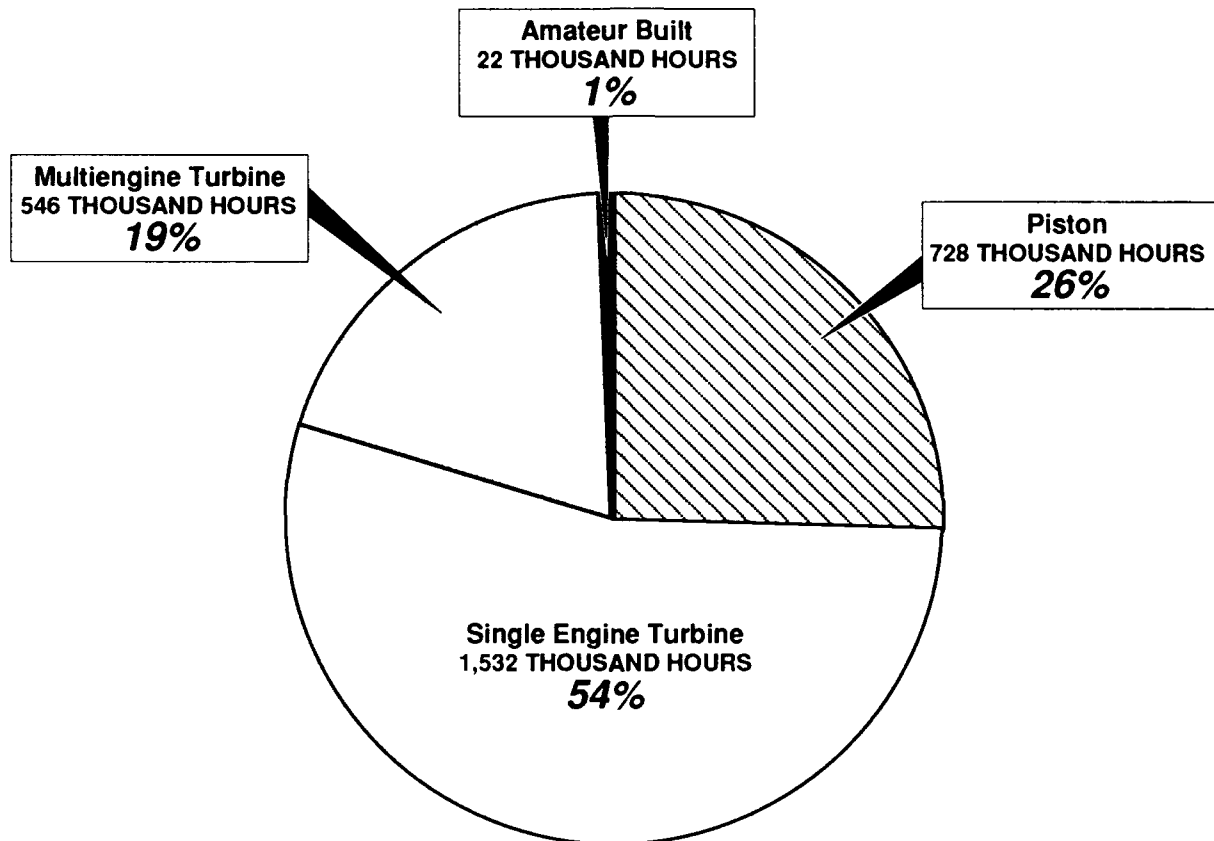
- o In 1989, piston rotorcraft, the rotorcraft type with the largest number registered (3,994), had 67.2 percent of their fleet active. However, single engine turbine rotorcraft, the rotorcraft type with the second largest number of rotorcraft registered (3,616), had 89.8 percent of their fleet active.
- o Single engine turbine rotorcraft flew more than 54 percent of the total hours flown.
- o Multiengine turbine rotorcraft averaged the most hours flown per rotorcraft, with 552 average hours. The single engine turbine rotorcraft follow closely with an average of 481 hours.
- o The percentages of active rotorcraft in each region versus the total number of registered rotorcraft in each region range from a low of 62 percent in the Great Lakes region to a high of 86 percent in the Alaskan region.
- o The three regions with the greatest number of active rotorcraft are: the Western-Pacific with 1,458; the Southwestern with 1,413; and the Southern with 1,223. These three regions also had the highest number of total hours flown. The Southwestern ranked first with 779,136 hours, the Western-Pacific was second with 664,113 hours, and the Southern region had 342,154 hours.
- o The Southwestern region had the highest average hours flown, 577. This most likely can be attributed to the use of helicopters in offshore exploration for oil and natural gas in Louisiana and Texas, as well as law enforcement activities throughout the region.
- o The state with the largest estimated number of active rotorcraft is California with 1,072 active rotorcraft. The next states with the largest estimated number of active rotorcraft are Louisiana with 645 and Florida with 635.

**Figure 9.1**  
**1989 ACTIVE VS. REGISTERED ROTORCRAFT**  
**BY ROTORCRAFT TYPE**



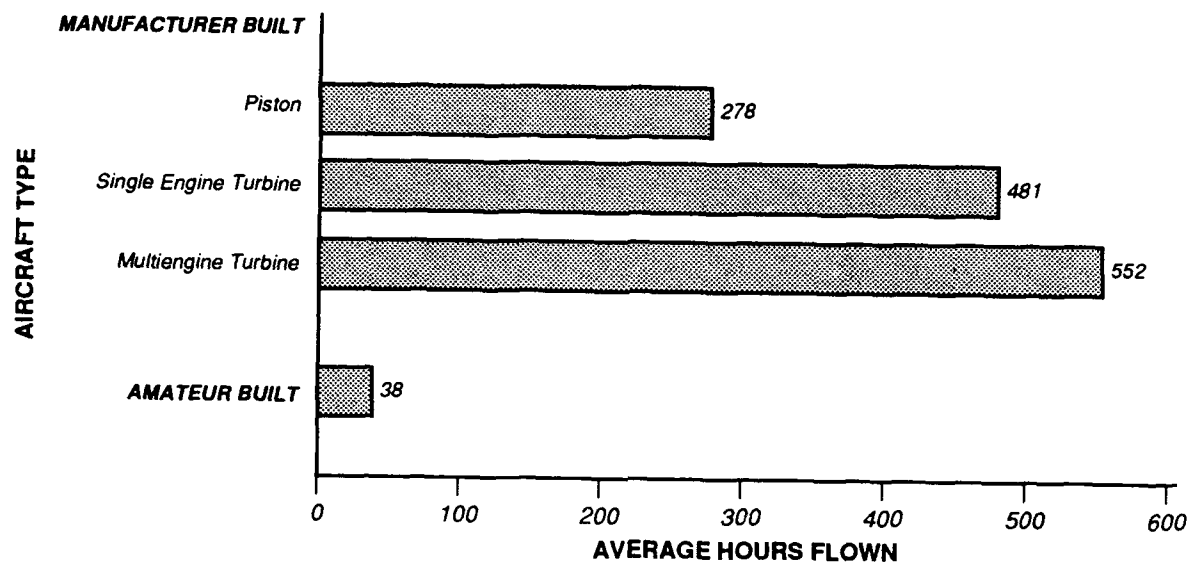
**SOURCE:** Table 9.1

**Figure 9.2**  
**1989 ROTORCRAFT TOTAL FLIGHT HOURS**  
**BY ROTORCRAFT TYPE**



**SOURCE: Table 9.1**

**Figure 9.3**  
**1989 ROTORCRAFT AVERAGE HOURS FLOWN**  
**BY ROTORCRAFT TYPE**



**SOURCE:** Table 9.1

9.1 1989 ROTORCRAFT POPULATION SIZE, ACTIVE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY ROTORCRAFT TYPE

PAGE 1 OF 1

ROTORCRAFT TYPE	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
MANUFACTURER BUILT:									
PISTON TOTAL:	3,994	2,684	1.2	67.2	0.8	728,125	2.2	277.8	2.0
TURBINE: SINGLE ENGINE	3,616	3,248	0.5	89.8	0.4	1,532,270	1.0	480.5	0.9
TURBINE: MULTI - ENGINE	1,069	984	0.7	92.0	0.7	546,471	2.0	551.8	1.9
TURBINE TOTAL:	4,685	4,232	0.4	90.3	0.4	2,078,741	0.9	496.5	0.8
MANUFACTURER BUILT TOTAL:	8,679	6,916	0.5	79.7	0.4	2,806,866	0.9	417.3	0.8
AMATEUR BUILT TOTAL:	1,790	572	3.5	32.0	1.1	21,830	7.5	38.2	6.7
TOTAL - ALL ROTORCRAFT:	10,469	7,488	0.6	71.5	0.4	2,828,697	0.9	390.2	0.8

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

9.2 1989 ROTORCRAFT POPULATION SIZE, ACTIVE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PAGE 1 OF 3

MANUFACTURER/ MODEL GROUP	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
OTHER 1 (*)	126	93	14.7	73.8	10.9	9,901	49.7	106.5	47.5
OTHER 2 (*)	113	91	4.4	80.7	3.5	36,571	9.9	401.1	8.8
OTHER 3 (*)	142	111	3.3	78.4	2.6	69,599	8.2	625.1	7.5
OTHER 4 (*)	1,790	572	3.5	31.9	1.1	21,830	7.5	38.2	6.7
AERORSJ2	38	20	13.3	51.7	6.9	576	21.5	29.3	16.9
AEROSPAS355	109	108	0.6	99.0	0.6	58,868	2.9	545.6	2.9
AEROSPSA316	91	61	6.4	67.4	4.3	27,516	10.0	448.9	7.7
AGUSTA205	32	30	3.4	95.0	3.2	11,856	9.9	390.0	9.3
AGUSTAA109	66	66	0.0	100.0	0.0	15,372	8.7	232.9	8.7
AIRSPC18	23	15	14.9	64.3	9.6	939	40.0	63.5	37.1
ARCNEH37	45	0	0.0	0.0	0.0	0	0.0	0.0	0.0
BELL 204	26	22	5.2	84.3	4.4	5,621	8.4	256.6	6.6
BELL 206	1,900	1,810	0.3	95.3	0.3	979,907	1.0	541.5	1.0
BELL 212	117	106	3.1	90.2	2.8	56,155	6.2	532.1	5.4
BELL 222	83	70	2.5	84.3	2.1	26,601	4.5	380.3	3.7
BELL 412	61	61	0.0	100.0	0.0	41,651	5.8	682.8	5.8
BELL 47	838	579	2.3	69.1	1.6	155,156	5.3	267.8	4.8
BOLKMS105	175	171	1.9	97.7	1.9	107,506	6.1	628.6	5.8
BOLKMS117	113	110	2.9	97.2	2.8	54,321	7.2	494.5	6.6
ENSTRMF28	421	330	2.2	78.5	1.7	61,181	9.8	185.1	9.6
H23/HTE	36	12	22.9	32.1	7.3	2,302	48.5	199.2	42.8

9.2 1989 ROTORCRAFT POPULATION SIZE, ACTIVE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PAGE 2 OF 3

MANUFACTURER/ MODEL GROUP	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
H34/55	29	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS
HILLERFH1100	64	29	20.7	45.2	9.4	3,871	34.7	133.7	27.8
HILLERUH12	585	373	3.0	63.8	1.9	78,181	5.9	210.1	5.2
HUGHES269	676	476	2.0	70.4	1.4	162,192	4.5	340.9	4.0
HUGHES369	600	551	1.0	91.8	0.9	245,743	3.5	446.3	3.3
HYNES B2	126	53	10.2	41.9	4.3	3,577	15.9	67.7	12.2
MACDOUG369	61	61	0.0	100.0	0.0	30,873	5.7	506.1	5.7
MILITARY204	201	142	6.3	70.8	4.5	17,028	12.1	119.6	10.3
MILITARY47	395	235	3.7	59.4	2.2	46,384	8.0	198.1	7.2
MODFD47	53	37	10.8	70.4	7.6	11,898	20.3	319.0	17.2
ORLHELH19	73	44	33.5	60.3	20.2	7,014	59.1	159.2	43.7
ORLHELH58	33	11	60.3	33.3	20.1	220	60.3	20.0	0.0
ROBSINR22	408	395	0.6	96.9	0.6	176,948	3.2	447.6	3.2
SCHWZ4269	54	48	2.0	89.6	1.8	27,400	4.9	566.2	4.5
SKRSKYS55	34	7	55.0	20.0	11.0	323	58.7	47.5	20.5
SKRSKYS58	72	35	17.9	48.6	8.7	4,073	21.0	116.4	10.8
SKRSKYS58T	38	27	11.2	71.4	8.0	12,170	19.4	448.4	15.9
SKRSKYS61	28	14	6.7	49.6	3.3	12,133	10.2	873.6	7.7
SKRSKYS76	175	167	1.0	95.6	0.9	104,265	2.8	623.4	2.6
SNIAS 350	271	255	1.1	94.0	1.0	12,895	2.9	501.9	2.7
SNIAS SA318	21	0	0.0	0.0	0.0	0	0.0	0.0	0.0



9.2 1989 ROTORCRAFT POPULATION SIZE, ACTIVE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PAGE 3 OF 3

MANUFACTURER/ MODEL GROUP	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
SNIAS SA341	29	20	15.4	68.7	10.6	2,958	25.8	148.6	20.8
TH55	60	42	3.8	70.1	2.6	4,584	7.7	108.9	6.7
TOMCAT	38	24	13.1	63.8	8.3	4,830	16.4	199.2	9.8
TOTAL	10,469	7,488	0.6	71.5	0.4	2,828,696	0.9	390.2	0.8

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

(\*) THE "OTHER" CATEGORIES REPRESENT:

- OTHER 1 - MANUFACTURER BUILT - PISTON
- OTHER 2 - MANUFACTURER BUILT - TURBINE-SINGLE ENGINE
- OTHER 3 - MANUFACTURER BUILT - TURBINE-MULTI ENGINE
- OTHER 4 - AMATEUR BUILT

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

9.3 1989 ROTORCRAFT POPULATION SIZE, ACTIVE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY REGION OF BASED ROTORCRAFT

PAGE 1 OF 1

REGION	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
ALASKAN	289	248	5.2	85.7	6.3	101,441	5.8	429.5	3.5
CENTRAL	335	216	6.5	64.4	5.4	62,804	6.8	310.3	5.9
EASTERN	1,333	1,004	2.8	75.3	2.8	281,562	3.2	287.7	2.5
GREAT LAKES	1,208	752	3.5	62.2	2.7	182,934	4.5	255.3	3.6
NEW ENGLAND	378	292	4.8	77.4	5.1	84,710	5.4	312.0	3.9
NORTHWEST MT.	1,264	882	3.1	69.8	2.8	271,558	3.9	323.5	3.3
SOUTHERN	1,751	1,223	2.6	69.9	2.4	342,154	2.7	297.0	2.7
SOUTHWESTERN	1,863	1,413	2.1	75.9	2.1	779,136	2.2	577.1	1.5
WESTERN-PACIFIC	1,983	1,458	2.1	73.5	2.1	664,113	2.2	468.1	2.1
TOTAL	10,469	7,488	0.6	71.5	0.4	2,810,971	1.1	387.9	0.8

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

9.4 1989 ROTORCRAFT POPULATION SIZE, ACTIVE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY STATE OF BASED ROTORCRAFT

PAGE 1 OF 3

STATE	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
ALABAMA	163	96	10.4	58.8	7.9	22,813	10.5	276.9	10.8
ALASKA	289	248	5.2	85.7	6.3	101,441	5.8	429.5	3.5
ARIZONA	293	176	7.4	60.0	5.9	69,153	7.1	400.2	5.3
ARKANSAS	66	37	16.2	56.8	10.8	7,641	20.2	212.7	14.5
CALIFORNIA	1,430	1,072	2.5	75.0	2.6	449,346	2.5	431.3	2.4
COLORADO	151	101	9.9	67.3	9.0	32,864	11.2	344.8	9.7
CONNECTICUT	78	66	10.6	84.7	12.1	23,984	12.4	385.0	7.8
DELAWARE	39	33	18.2	85.5	20.6	9,434	15.9	288.8	11.7
DIST. OF COLUMBIA	32	32	21.9	99.0	31.4	5,229	35.6	169.4	29.5
FLORIDA	869	635	4.3	73.0	4.1	168,751	3.7	279.3	4.4
GEORGIA	192	127	7.1	66.2	6.5	54,500	6.8	462.0	5.1
HAWAII	150	126	6.3	83.6	7.5	103,653	6.5	842.5	4.0
IDAHO	108	86	9.3	79.7	10.1	22,833	10.5	263.4	10.3
ILLINOIS	230	137	10.2	59.5	7.5	27,473	11.6	203.8	7.3
INDIANA	183	124	8.1	68.1	7.1	29,352	8.9	248.1	8.2
IOWA	91	46	17.4	50.7	10.3	12,490	15.8	303.8	11.8
KANSAS	73	45	13.3	61.5	10.7	11,266	14.6	246.5	19.0
KENTUCKY	86	68	8.8	78.9	9.8	15,884	10.4	251.7	7.2
LOUISIANA	704	645	2.9	91.6	3.8	511,658	2.9	807.7	1.3
MAINE	43	27	18.5	63.8	16.2	4,623	21.2	178.3	16.9
MARYLAND	111	101	7.9	90.2	9.7	31,635	8.2	318.7	6.2
MASSACHUSETTS	145	107	8.4	73.7	8.1	39,631	7.8	389.7	5.3
MICHIGAN	216	151	7.3	69.8	6.7	36,169	7.9	253.5	6.7

9.4 1989 ROTORCRAFT POPULATION SIZE, ACTIVE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY STATE OF BASED ROTORCRAFT

PAGE 2 OF 3

STATE	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
MINNESOTA	140	73	11.0	52.1	7.0	17,862	10.8	251.7	6.3
MISSISSIPPI	62	51	11.8	81.8	14.4	12,107	17.4	242.2	11.5
MISSOURI	152	114	8.8	75.1	8.5	38,258	8.9	358.1	6.6
MONTANA	97	69	15.9	70.8	14.0	18,796	27.0	265.7	12.6
NEBRASKA	20	11	27.3	56.8	21.1	790	32.4	80.5	14.5
NEVADA	109	85	10.6	77.3	11.2	41,962	12.6	496.6	16.1
NEW HAMPSHIRE	78	67	9.0	87.0	11.4	13,568	9.3	207.7	6.4
NEW JERSEY	239	202	6.4	84.5	7.5	59,221	5.4	300.3	3.5
NEW MEXICO	63	40	25.0	63.8	18.9	7,093	15.6	223.4	14.6
NEW YORK	334	239	5.9	71.6	5.4	67,922	6.5	299.5	6.0
NORTH CAROLINA	135	88	9.1	65.0	8.2	22,399	11.4	268.2	9.3
NORTH DAKOTA	28	23	17.4	81.4	30.3	8,013	19.6	356.9	16.5
OHIO	296	190	6.8	64.0	5.8	53,608	10.7	294.2	9.5
OKLAHOMA	160	92	12.0	57.5	8.3	21,549	10.1	251.1	7.4
OREGON	406	282	5.3	69.4	4.9	96,421	5.9	355.4	4.6
PENNSYLVANIA	408	258	6.2	63.3	5.1	70,913	7.4	276.0	5.7
RHODE ISLAND	15	10	20.0	67.5	19.9	2,041	23.8	204.0	15.2
SOUTH CAROLINA	115	67	13.4	58.5	9.4	21,525	12.6	327.8	12.3
SOUTH DAKOTA	13	9	33.3	73.3	29.0	1,838	42.5	199.4	25.5
TENNESSEE	129	92	8.7	71.6	8.2	24,176	10.4	276.3	6.2
TEXAS	870	599	3.3	68.8	3.1	231,197	3.9	399.2	3.0
UTAH	106	70	10.0	66.0	9.2	22,335	13.5	383.5	7.6
VERMONT	20	15	26.7	75.9	24.0	862	37.0	90.1	21.6

9.4 1989 ROTORCRAFT POPULATION SIZE, ACTIVE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY STATE OF BASED ROTORCRAFT

PAGE 3 OF 3

STATE	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
VIRGINIA	123	97	11.3	78.9	11.4	24,649	13.5	261.7	5.9
WASHINGTON	349	233	6.9	66.9	5.7	71,586	6.7	325.7	6.7
WEST VIRGINIA	46	41	12.2	90.1	17.8	12,559	11.7	308.9	6.1
WISCONSIN	103	45	15.6	43.8	8.6	8,619	22.0	214.6	11.5
WYOMING	47	40	15.0	85.6	16.5	6,723	14.5	194.9	7.1
PUERTO RICO	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
TOTAL	10,469	7,488	0.6	71.5	0.4	2,770,415	6.2	390.2	0.8

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

### 3. LANDINGS AND ROTORCRAFT BASE FACILITIES

Another aviation activity measure used to indicate growth trends and activity levels in the rotorcraft fleet is number of landings. The first 4 tables in this section, Tables 9.5-9.8, contain data on the number of rotorcraft landing at the five types of landing facilities: 1) airports; 2) heliports; 3) helipads at airports; 4) offshore platforms; and 5) other. The data in these tables are presented by four distinct factors: 1) Rotorcraft Type; 2) Service Difficulty Reporting (SDR) Rotorcraft Manufacturer/Model Group; 3) Region of Based Rotorcraft; and 4) State of Based Rotorcraft.

Tables 9.9-9.12 provide estimates of the average number of landings per flight hour at each of the five landing facility types by the same four factors listed above.

Table 9.13 presents total rotorcraft landings by expanded use category by rotorcraft type. (Section 4, Primary Use by Expanded Use Category, discusses rotorcraft expanded use categories in greater detail).

The last group of tables in this section, Tables 9.14-9.17, present data on the number of active rotorcraft based at airports, heliports or some other base facility type as of December 31, 1989, by: 1) rotorcraft type; 2) SDR Rotorcraft Manufacturing/Model Group; 3) Region of Based Rotorcraft; and 4) State of Based Rotorcraft.

Four figures are included in this section. Figure 9.4 shows the number of rotorcraft landings by aircraft type; Figure 9.5 displays the number of landings by type of landing facility; Figure 9.6 shows the number of rotorcraft landings by expanded use category; and Figure 9.7 shows the number and percent of active rotorcraft by base facility type.

The following facts can be derived from Tables 9.5-9.13:

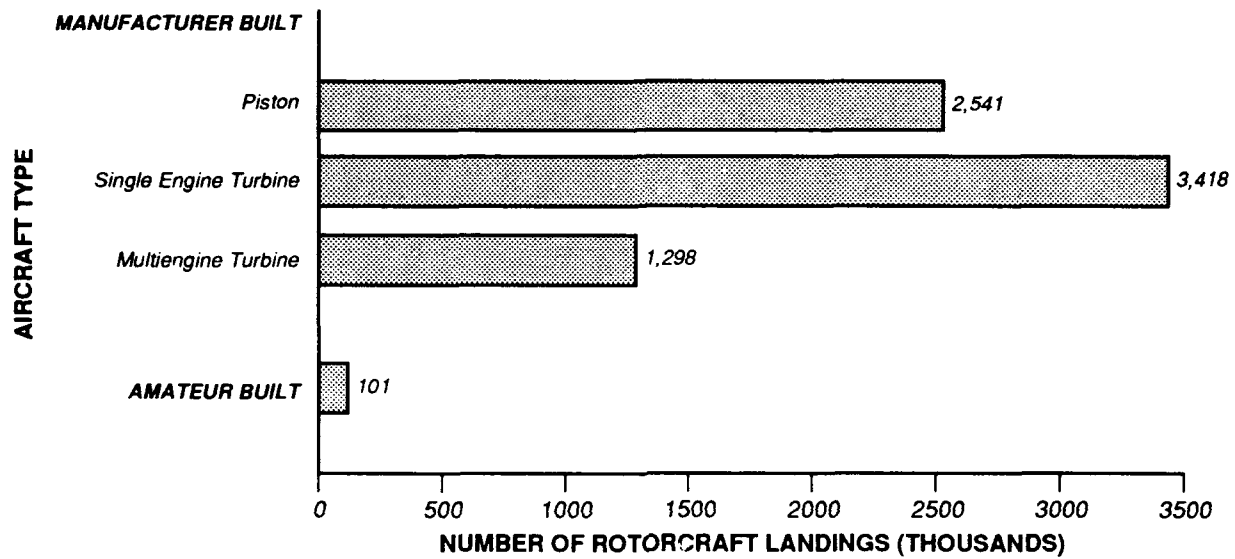
- o During 1989, the rotorcraft fleet made almost 7.4 million landings.
- o The majority of rotorcraft landings, 29 percent, were made at some "other" type of landing facility; 23.3 percent were made at helipads at airports; 22.3 percent were made at heliports; 20.1 percent were made at airports; and 4.9 percent were made at offshore platforms.
- o California accounted for 18.9 percent of the 1989 rotorcraft landings. Louisiana was second with 17.2 percent, and Texas was third with 6.3 percent of the rotorcraft landings.
- o During 1989, 47.8 percent of all landings by piston engine rotorcraft were made at "other" types of landing facilities; 31.3 percent of the landings by single engine turbine rotorcraft were made at heliports; 43.5 percent of the landings made by multiengine turbine rotorcraft were made at heliports; and 48.1 percent of the landings by amateur built rotorcraft were made at helipads at airports.

- o The three regions with the greatest number of landings are: Southwestern with nearly 2 million landings; Western-Pacific with 1.7 million; and Eastern with more than 951,000 landings.
- o Amateur built rotorcraft averaged the greatest number of landings per flight hour, 4.6. Piston rotorcraft had 3.5, multiengine turbine rotorcraft had 2.4, and single engine turbine rotorcraft had 2.2 landings per hour.
- o The average number of landings per flight hour was 3.4 in the Eastern region; 2.9 in the Great Lakes region; and 2.7 in the Northwest Mountain region.
- o The 50-state average number of landings per flight hour was 2.6. The highest average number of landings per flight hour was experienced by Virginia, with 12 landings per flight hour.
- o Of the 7.4 million landings in 1989, 1.8 million were conducted for air taxi purposes, 1.3 million for aerial application purposes, and 1.1 million for instructional purposes.
- o Most piston rotorcraft landings were in the aerial application use category (45 percent). The majority of single and multiengine turbine rotorcraft landings were in the air taxi category (with 37 and 35 percent, respectively), and most amateur built rotorcraft landings were in the personal use category (25 percent).

The following observations can be derived from Tables 9.14-9.17:

- o Over 51 percent of all active rotorcraft are based at airports. Heliports account for another 34 percent. The remaining active rotorcraft are based at some "Other" base facility type.
- o In all the regions except the Southwestern, active rotorcraft are based at airports, with percentages ranging from 46 percent in the Central region to a high of 70 percent in the New England region. In the Southwestern region, the majority of active rotorcraft, 66 percent, are based at heliports.

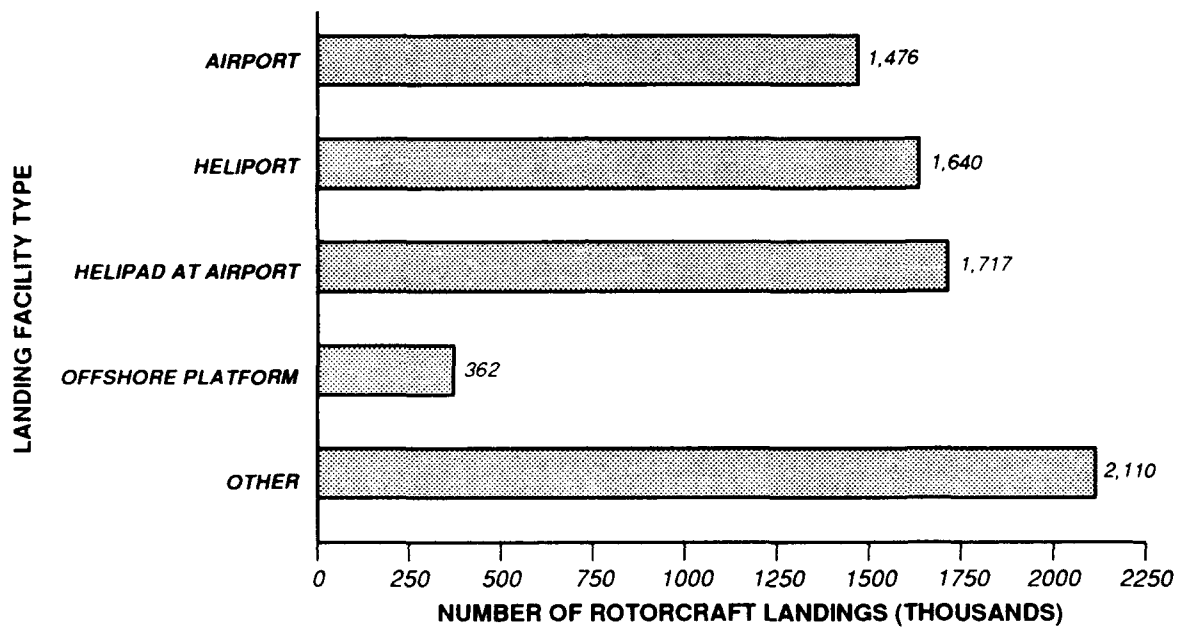
**Figure 9.4**  
**1989 NUMBER OF ROTORCRAFT LANDINGS**  
**BY ROTORCRAFT TYPE**



**SOURCE:** Table 9.5

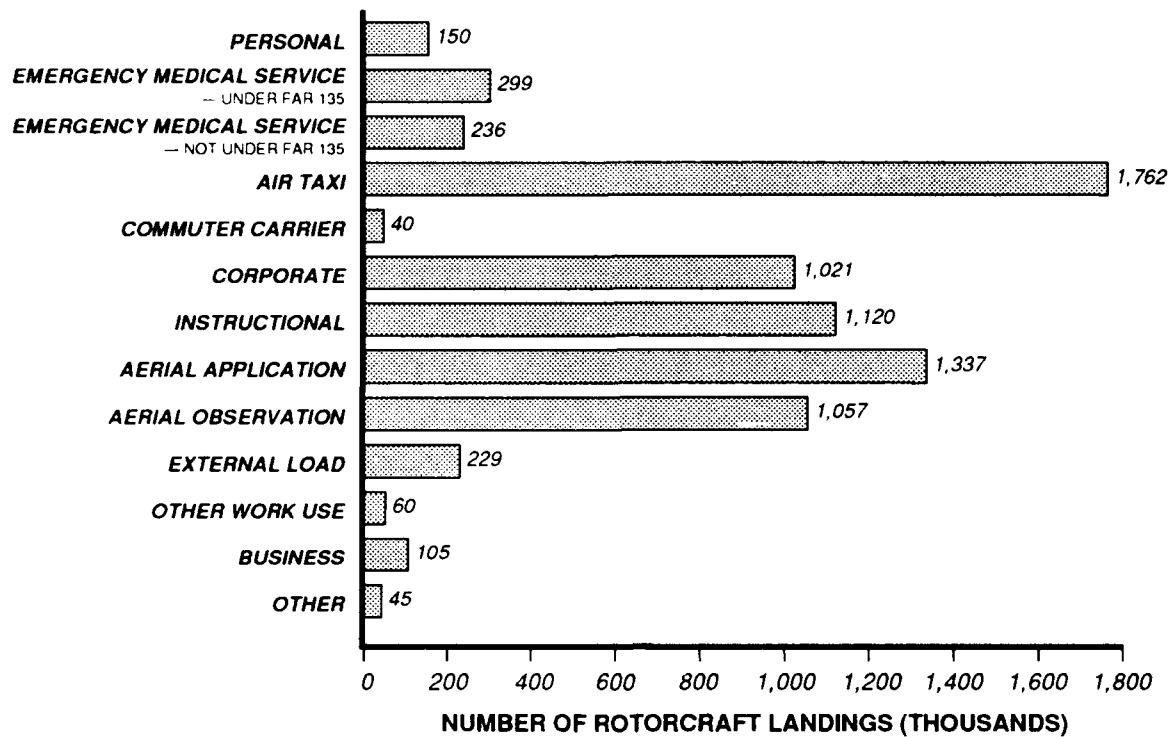


Figure 9.5  
1989 ROTORCRAFT LANDINGS  
BY LANDING FACILITY TYPE



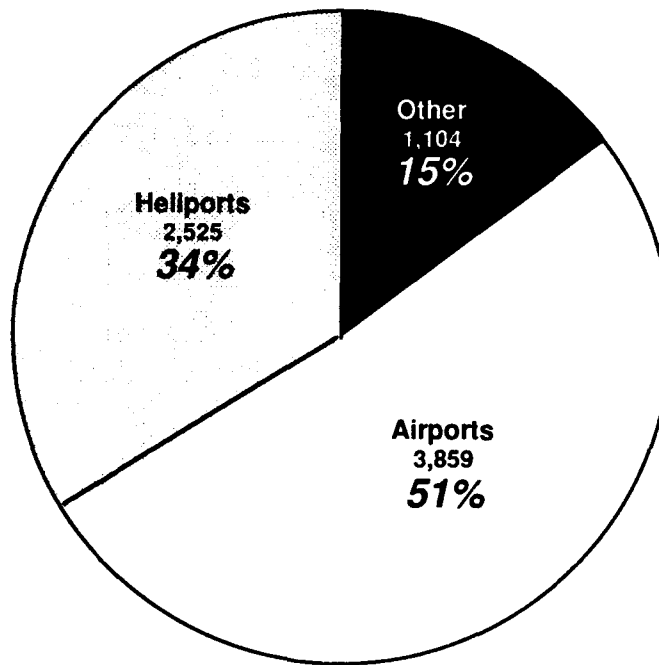
SOURCE: Table 9.5

**Figure 9.6**  
**1989 NUMBER OF ROTORCRAFT LANDINGS**  
**BY EXPANDED USE CATEGORY**



**SOURCE:** Table 9.13

**Figure 9.7**  
**1989 ACTIVE ROTORCRAFT**  
**BY BASE FACILITY TYPE**



**SOURCE: Table 9.14**

9.5 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE  
BY ROTORCRAFT TYPE

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ROTORCRAFT TYPE	TOTAL LANDINGS	LANDING FACILITY TYPE			OFFSHORE PLATFORM	OTHER
		AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS		
MANUFACTURER BUILT:						
PISTON TOTAL:						
EST. LANDINGS	2,540,599	791,611	7,914	407,048	95,043	1,214,137
% STD. ERROR	2.9	3.5	23.1	12.1	7.0	3.0
TURBINE: SINGLE ENGINE						
EST. LANDINGS	3,417,711	548,009	1,068,251	813,693	204,362	779,272
% STD. ERROR	1.3	2.8	3.7	3.3	4.8	2.5
TURBINE: MULTI - ENGINE						
EST. LANDINGS	1,297,740	98,195	563,894	447,841	61,975	102,656
% STD. ERROR	3.2	7.8	7.2	6.1	16.7	9.5
TURBINE TOTAL:						
EST. LANDINGS	4,715,450	646,204	1,632,145	1,261,534	266,336	881,928
% STD. ERROR	1.3	2.6	3.5	2.9	4.8	2.4
MANUFACTURER BUILT TOTAL:						
EST. LANDINGS	7,256,049	1,437,815	1,640,059	1,668,582	361,380	2,096,065
% STD. ERROR	1.3	2.4	3.5	4.1	4.0	2.2
AMATEUR BUILT:						
EST. LANDINGS	100,935	37,869	0	48,503	342	13,496
% STD. ERROR	7.6	2.3	0.0	19.9	47.7	4.1
TOTAL						
EST. LANDINGS	7,356,984	1,475,685	1,640,059	1,717,085	361,722	2,109,561
% STD. ERROR	1.3	1.9	3.5	4.1	3.9	2.0

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

9.6 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

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MANUFACTURER/ MODEL GROUP	TOTAL LANDINGS	LANDING FACILITY TYPE				OFFSHORE PLATFORM	OTHER
		AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS			
OTHER 1 (*) EST. LANDINGS % STD. ERROR	63,380 64.1	3,882 70.0	0 0.0	38,156 137.6	0 0.0	12,884 26.0	
OTHER 2 (*) EST. LANDINGS % STD. ERROR	59,115 9.6	10,025 16.1	0 0.0	13,317 22.5	2,198 44.0	33,899 18.2	
OTHER 3 (*) EST. LANDINGS % STD. ERROR	131,582 3.4	9,340 15.3	39,689 11.4	65,137 8.5	663 48.6	14,255 19.2	
OTHER 4 (*) EST. LANDINGS % STD. ERROR	100,935 6.7	37,869 2.3	0 0.0	48,503 19.9	342 47.7	13,496 4.1	
AERORSJ2 EST. LANDINGS % STD. ERROR	1,168 11.0	1,168 11.0	0 0.0	0 0.0	0 0.0	0 0.0	
AEROSPAS355 EST. LANDINGS % STD. ERROR	114,070 5.2	4,426 30.8	65,640 6.5	32,562 17.9	3,750 31.2	8,532 28.5	
AEROSPSA316 EST. LANDINGS % STD. ERROR	81,633 2.3	0 0.0	0 0.0	13,414 13.2	2,181 42.2	68,241 5.6	
AGUSTA205 EST. LANDINGS % STD. ERROR	39,174 5.2	224 53.0	0 0.0	1,228 48.8	0 0.0	41,456 5.9	
AGUSTAA109 EST. LANDINGS % STD. ERROR	46,880 8.2	9,793 17.0	0 0.0	24,974 19.0	2,239 47.6	11,026 26.3	

9.6 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PAGE 2 OF 6

MANUFACTURER/ MODEL GROUP	TOTAL LANDINGS	LANDING FACILITY TYPE				OFFSHORE PLATFORM	OTHER
		AIRPORTS	HELIPORT	HELIPAD/ AIRCRAFTS			
AIRSPC18 EST. LANDINGS % STD. ERROR	2,638 24.5	2,207 29.7	296 48.9	0 0.0	0 0.0	0 0.0	
ARCRNEH37 EST. LANDINGS % STD. ERROR	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	
BELL 204 EST. LANDINGS % STD. ERROR	16,938 3.3	370 8.3	0 0.0	6,495 23.0	0 0.0	1,873 33.7	
BELL 206 EST. LANDINGS % STD. ERROR	2,389,016 1.7	290,590 3.5	1,046,618 3.8	558,948 4.2	97,474 6.1	394,177 3.3	
BELL 212 EST. LANDINGS % STD. ERROR	149,377 6.6	18,628 24.8	114,450 10.0	2,409 63.3	0 0.0	15,462 22.0	
BELL 222 EST. LANDINGS % STD. ERROR	57,306 3.7	5,025 18.2	7,901 10.9	26,078 8.2	8,077 23.3	8,045 16.8	
BELL 412 EST. LANDINGS % STD. ERROR	73,275 6.9	6,041 40.6	42,363 14.0	10,674 26.1	0 0.0	14,118 24.1	
BELL 47 EST. LANDINGS % STD. ERROR	523,008 3.1	63,774 11.0	2,434 58.9	30,251 11.1	32,781 15.5	395,127 4.5	
BOLKMS105 EST. LANDINGS % STD. ERROR	220,348 14.4	2,057 65.3	162,578 24.1	36,641 25.8	4,009 49.7	10,429 47.6	

9.6 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PAGE 3 OF 6

MANUFACTURER/ MODEL GROUP	TOTAL LANDINGS	LANDING FACILITY TYPE			OFFSHORE PLATFORM	OTHER
		AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS		
BOLRMS117 EST. LANDINGS % STD. ERROR	248,605 6.7	19,544 45.7	0 0.0	190,395 13.0	26,548 47.9	7,625 78.0
ENSTRMF28 (1) EST. LANDINGS % STD. ERROR	77,301 7.8	39,114 11.8	0 0.0	31,069 15.8	2,082 21.0	8,102 13.5
ENSTRMF28 (2) EST. LANDINGS % STD. ERROR	46,215 9.5	16,674 21.3	0 0.0	7,921 32.6	7,806 24.9	12,913 16.6
H23/HTE EST. LANDINGS % STD. ERROR	1,384 6.2	0 0.0	0 0.0	0 0.0	0 0.0	1,116 10.4
H34/55 EST. LANDINGS % STD. ERROR	DIS	DIS	DIS	DIS	DIS	DIS
HILLERFH1100 EST. LANDINGS % STD. ERROR	4,383 6.9	3,130 16.5	0 0.0	258 41.2	0 0.0	1,083 26.4
HILLERUH12 (1) EST. LANDINGS % STD. ERROR	374,222 5.4	32,780 11.2	2,449 22.6	115,881 17.0	0 0.0	220,298 4.7
HILLERUH12 (2) EST. LANDINGS % STD. ERROR	20,224 11.8	229 31.3	0 0.0	181 53.8	2,249 29.8	19,207 13.3
HUGHES269 EST. LANDINGS % STD. ERROR	401,034 4.1	104,226 7.9	2,736 35.9	114,562 7.2	7,555 20.0	175,195 8.6

9.6 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

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MANUFACTURER/ MODEL GROUP	TOTAL LANDINGS	LANDING FACILITY TYPE			OFFSHORE PLATFORM	OTHER
		AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS		
HUGHES369 EST. LANDINGS % STD. ERROR	403,117 2.9	130,603 7.0	4,244 35.2	95,030 8.5	29,205 12.5	144,158 6.8
HYNES B2 EST. LANDINGS % STD. ERROR	7,285 3.2	2,374 13.8	0 0.0	918 18.4	311 46.0	3,504 9.2
MACDOUG369 EST. LANDINGS % STD. ERROR	54,642 5.4	38,167 8.8	0 0.0	4,160 14.8	7,677 22.0	6,093 16.4
MILITARY204 EST. LANDINGS % STD. ERROR	36,129 6.9	2,559 19.4	0 0.0	5,314 23.8	6,008 37.1	22,688 12.1
MILITARY47 (1) EST. LANDINGS % STD. ERROR	261,046 4.1	31,646 13.1	0 0.0	27,037 23.6	15,441 15.4	179,239 5.9
MILITARY47 (2) EST. LANDINGS % STD. ERROR	3,791 11.9	0 0.0	0 0.0	1,827 32.8	0 0.0	2,249 43.7
MODEFD47 EST. LANDINGS % STD. ERROR	58,779 11.0	53 33.3	0 0.0	12,432 63.9	1,243 63.9	34,360 15.2
ORLHELH19 EST. LANDINGS % STD. ERROR	71,066 33.4	0 0.0	0 0.0	0 0.0	0 0.0	71,066 33.4
ORLHEL58 EST. LANDINGS % STD. ERROR	110 0.0	31 61.3	0 0.0	0 0.0	0 0.0	0 0.0



9.6 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

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MANUFACTURER/ MODEL GROUP	TOTAL LANDINGS	LANDING FACILITY TYPE			OFFSHORE PLATFORM	OTHER
		AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS		
ROBSINR22 EST. LANDINGS % STD. ERROR	608,745 4.5	497,297 5.8	0 0.0	19,749 15.0	32,049 14.6	59,795 11.2
SCHWZH269 EST. LANDINGS % STD. ERROR	48,492 6.9	5,323 18.4	0 0.0	15,001 7.6	2,913 16.5	24,211 15.8
SKRSKYS55 EST. LANDINGS % STD. ERROR	510 4.0	61 72.7	0 0.0	0 0.0	0 0.0	449 11.0
SKRSKYS58 EST. LANDINGS % STD. ERROR	8,053 8.2	1,296 78.1	0 0.0	26 78.1	0 0.0	6,379 6.4
SKRSKYS58T EST. LANDINGS % STD. ERROR	35,458 17.0	4,119 38.5	0 0.0	2,354 45.6	11,612 57.4	13,461 22.9
SKRSKYS61 EST. LANDINGS % STD. ERROR	18,351 4.0	9,377 10.8	0 0.0	0 0.0	64 32.8	7,038 8.4
SKRSKYS76 EST. LANDINGS % STD. ERROR	237,946 4.3	13,965 11.6	131,274 8.8	58,972 8.2	16,625 15.5	6,127 19.6
SNIAS 350 EST. LANDINGS % STD. ERROR	223,108 2.8	46,643 7.9	17,389 11.7	102,153 7.2	37,952 12.1	17,681 15.3
SNIAS SA318 EST. LANDINGS % STD. ERROR	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0

9.6 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

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MANUFACTURER/ MODEL GROUP	TOTAL LANDINGS	LANDING FACILITY TYPE				OTHER
		AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS	OFFSHORE PLATFORM	
SNIAS SA341						
EST. LANDINGS	4,767	4,674	0	1,092	0	95
% STD. ERROR	9.1	14.2	0.0	44.5	0.0	54.9
TH55						
EST. LANDINGS	12,921	4,599	0	1,966	669	5,641
% STD. ERROR	3.9	9.3	0.0	15.9	24.3	9.5
TOMCAT						
EST. LANDINGS	17,468	455	0	0	0	16,770
% STD. ERROR	7.2	52.9	0.0	0.0	0.0	9.1
TOTAL						
EST. LANDINGS	7,356,984	1,475,685	1,640,059	1,717,085	361,722	2,109,561
% STD. ERROR	1.3	1.9	3.5	4.1	3.9	2.0

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

(\*) THE "OTHER" CATEGORIES REPRESENT:

- OTHER 1 - MANUFACTURER BUILT - PISTON
- OTHER 2 - MANUFACTURER BUILT - TURBINE-SINGLE ENGINE
- OTHER 3 - MANUFACTURER BUILT - TURBINE-MULTI ENGINE
- OTHER 4 - AMATEUR BUILT

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

(1) INDICATES MANUFACTURER BUILT - PISTON

(2) INDICATES MANUFACTURER BUILT - TURBINE-SINGLE ENGINE

9.7 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE  
BY REGION OF BASED ROTORCRAFT

PAGE 1 OF 1

REGION	TOTAL LANDINGS	LANDING FACILITY TYPE				OTHER
		AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS	OFFSHORE PLATFORM	
ALASKAN EST. LANDINGS & STD. ERROR	248,360 6.7	52,035 10.8	28,332 42.2	29,152 29.0	2,495 83.2	115,893 9.1
CENTRAL EST. LANDINGS & STD. ERROR	127,037 7.9	19,255 10.5	0 0.0	69,806 11.9	6,305 29.3	23,281 12.6
EASTERN EST. LANDINGS & STD. ERROR	951,290 4.4	162,485 5.8	2,307 67.9	445,109 8.1	111,362 9.0	110,014 6.9
GREAT LAKES EST. LANDINGS & STD. ERROR	537,716 4.5	139,561 5.8	6,207 30.3	160,605 9.3	17,663 16.9	208,541 7.6
NEW ENGLAND EST. LANDINGS & STD. ERROR	214,147 6.3	97,553 8.5	0 0.0	77,435 11.5	3,997 29.1	17,306 13.1
NORTHWEST MT. EST. LANDINGS & STD. ERROR	729,578 4.5	97,912 10.8	124 240.1	84,757 11.9	29,229 14.6	397,415 4.6
SOUTHERN EST. LANDINGS & STD. ERROR	829,721 4.6	188,195 5.2	16,742 18.1	197,710 7.3	43,108 10.6	352,813 8.6
SOUTHWESTERN EST. LANDINGS & STD. ERROR	1,953,891 3.1	90,353 6.5	1,310,688 4.7	219,859 8.6	24,473 17.5	234,482 5.5
WESTERN-PACIFIC EST. LANDINGS & STD. ERROR	1,674,813 2.9	576,832 4.8	45,744 15.9	281,519 6.2	109,613 7.5	608,563 4.6
TOTAL EST. LANDINGS & STD. ERROR	7,356,984 1.3	1,475,685 1.9	1,640,059 3.5	1,717,085 4.1	361,722 3.9	2,109,561 2.0

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

9.8 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE  
BY STATE OF BASED ROTORCRAFT

PAGE 1 OF 6

STATE	TOTAL LANDINGS	LANDING FACILITY TYPE			OFFSHORE PLATFORM	OTHER
		AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS		
ALABAMA EST. LANDINGS % STD. ERROR	58,942 12.2	6,494 16.4	0 0.0	16,214 29.9	1,190 75.9	29,685 19.5
ALASKA EST. LANDINGS % STD. ERROR	248,360 6.7	52,035 10.8	28,332 42.2	29,152 336.2	2,495 83.2	115,893 9.1
ARIZONA EST. LANDINGS % STD. ERROR	113,332 8.4	26,174 8.9	28,332 0.0	21,542 20.5	17,738 21.1	44,291 14.0
ARKANSAS EST. LANDINGS % STD. ERROR	52,902 16.1	7,307 22.0	28,332 0.0	1,826 58.9	298 106.0	31,928 24.5
CALIFORNIA EST. LANDINGS % STD. ERROR	1,389,904 3.4	506,471 5.4	32,338 20.5	204,110 9.2	58,357 9.2	512,650 5.2
COLORADO EST. LANDINGS % STD. ERROR	65,048 11.9	13,948 17.8	32,338 0.0	3,626 61.5	7,713 43.2	34,492 13.6
CONNECTICUT EST. LANDINGS % STD. ERROR	83,388 11.3	45,907 13.5	32,338 0.0	25,207 17.0	7,713 0.0	108 226.5
DELAWARE EST. LANDINGS % STD. ERROR	16,743 21.0	7,460 28.4	32,338 0.0	2,790 88.0	820 49.1	3,397 43.5
DIST. OF COLUMBIA EST. LANDINGS % STD. ERROR	13,467 24.0	676 43.4	32,338 0.0	9,724 67.1	2,413 20.5	3,397 0.0

9.8 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE  
BY STATE OF BASED ROTORCRAFT

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STATE	TOTAL LANDINGS	LANDING FACILITY TYPE				OTHER
		AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS	OFFSHORE PLATFORM	
FLORIDA EST. LANDINGS & STD. ERROR	439,532 7.5	123,049 7.8	2,047 316.9	64,895 10.2	23,122 13.5	177,714 14.1
GEORGIA EST. LANDINGS & STD. ERROR	71,408 8.5	19,361 13.2	2,228 51.5	22,506 11.7	7,578 17.3	14,770 20.0
HAWAII EST. LANDINGS & STD. ERROR	125,966 7.9	46,178 13.0	1,131 153.5	36,366 22.7	23,740 14.1	4,325 45.5
IDAHO EST. LANDINGS & STD. ERROR	68,765 13.7	3,238 27.3	1,131 0.0	12,123 17.1	4,112 30.1	37,702 19.3
ILLINOIS EST. LANDINGS & STD. ERROR	72,784 10.9	15,035 17.4	1,559 83.7	27,889 20.0	3,508 25.0	20,799 9.1
INDIANA EST. LANDINGS & STD. ERROR	57,046 8.6	12,773 12.1	1,559 0.0	10,335 26.6	3,508 0.0	27,402 11.2
IOWA EST. LANDINGS & STD. ERROR	31,237 21.6	2,517 19.0	1,559 0.0	24,630 24.9	3,508 0.0	3,565 44.5
KANSAS EST. LANDINGS & STD. ERROR	19,351 14.0	2,762 23.6	1,559 0.0	4,418 31.7	2,149 44.0	8,857 18.7
KENTUCKY EST. LANDINGS & STD. ERROR	40,443 10.9	10,133 15.1	1,096 37.4	2,375 37.6	3,751 30.1	18,358 17.2

9.8 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE  
BY STATE OF BASED ROTORCRAFT

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STATE	TOTAL LANDINGS	LANDING FACILITY TYPE				OFFSHORE PLATFORM	OTHER
		AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS			
LOUISIANA EST. LANDINGS % STD. ERROR	1,267,777 4.8	3,140 16.7	1,120,143 5.4	55,211 20.6	5,565 36.4	22,890 16.5	
MAINE EST. LANDINGS % STD. ERROR	7,847 20.4	5,102 19.8	1,120,143 0.0	55,211 0.0	5,565 0.0	3,003 22.5	
MARYLAND EST. LANDINGS % STD. ERROR	34,753 9.5	11,213 16.3	1,120,143 0.0	328 64.4	5,428 21.4	8,056 14.0	
MASSACHUSETTS EST. LANDINGS % STD. ERROR	86,794 9.6	26,004 11.2	1,120,143 0.0	42,835 19.5	1,472 37.2	10,096 22.4	
MICHIGAN EST. LANDINGS % STD. ERROR	112,111 13.6	36,755 10.1	1,120,143 0.0	13,920 15.8	5,490 22.3	56,024 18.5	
MINNESOTA EST. LANDINGS % STD. ERROR	49,050 11.3	12,918 19.0	1,120,143 0.0	5,649 68.0	5,490 0.0	21,139 17.4	
MISSISSIPPI EST. LANDINGS % STD. ERROR	31,382 18.9	2,468 19.6	1,120,143 0.0	8,516 28.9	1,730 38.0	11,366 22.0	
MISSOURI EST. LANDINGS % STD. ERROR	69,432 11.3	11,702 16.3	1,120,143 0.0	40,796 22.9	3,388 43.7	6,698 23.5	
MONTANA EST. LANDINGS % STD. ERROR	33,407 16.1	919 34.4	1,120,143 0.0	40,796 0.0	441 54.1	24,706 17.3	

9.8 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE  
BY STATE OF BASED ROTORCRAFT

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STATE	TOTAL LANDINGS	LANDING FACILITY TYPE				OTHER
		AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS	OFFSHORE PLATFORM	
NEBRASKA						
EST. LANDINGS	2,308	1,088	1,120,143	40,796	441	398
% STD. ERROR	33.4	38.3	0.0	0.0	0.0	172.3
NEVADA						
EST. LANDINGS	44,607	2,123	1,120,143	17,454	8,031	8,301
% STD. ERROR	12.9	16.9	0.0	40.4	40.3	18.6
NEW HAMPSHIRE						
EST. LANDINGS	25,031	9,173	1,120,143	7,578	2,525	3,536
% STD. ERROR	10.9	16.7	0.0	20.1	36.8	19.7
NEW JERSEY						
EST. LANDINGS	188,842	50,079	971	62,567	46,512	10,149
% STD. ERROR	7.4	15.6	32.3	9.0	12.2	47.5
NEW MEXICO						
EST. LANDINGS	12,464	409	971	6,203	1,009	2,743
% STD. ERROR	30.0	66.5	0.0	21.4	57.7	36.7
NEW YORK						
EST. LANDINGS	177,791	26,330	971	88,690	24,909	24,455
% STD. ERROR	7.0	10.0	0.0	13.8	17.4	11.7
NORTH CAROLINA						
EST. LANDINGS	36,121	7,234	971	7,464	24,909	29,387
% STD. ERROR	11.6	15.9	0.0	22.5	52.8	10.2
NORTH DAKOTA						
EST. LANDINGS	26,892	3,723	971	8,355	24,909	11,482
% STD. ERROR	21.8	50.4	0.0	127.8	0.0	55.9
OHIO						
EST. LANDINGS	148,248	23,193	4,648	83,501	802	22,028
% STD. ERROR	8.6	16.6	26.8	18.1	62.7	11.2

9.8 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE  
BY STATE OF BASED ROTORCRAFT

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STATE	TOTAL LANDINGS	LANDING FACILITY TYPE			OFFSHORE PLATFORM	OTHER
		AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS		
OKLAHOMA						
EST. LANDINGS	70,067	9,608	4,648	6,151	6,171	44,690
% STD. ERROR	11.8	18.5	0.0	23.3	30.0	14.3
OREGON						
EST. LANDINGS	254,448	46,847	124	8,217	5,083	147,485
% STD. ERROR	6.5	26.2	184.3	41.0	45.3	7.0
PENNSYLVANIA						
EST. LANDINGS	218,932	33,317	836	108,059	27,775	36,440
% STD. ERROR	8.2	11.5	178.5	21.8	40.9	13.9
RHODE ISLAND						
EST. LANDINGS	5,490	3,611	836	1,080	27,775	36,440
% STD. ERROR	22.6	26.6	0.0	52.3	0.0	0.0
SOUTH CAROLINA						
EST. LANDINGS	64,675	1,103	836	13,801	3,682	37,043
% STD. ERROR	14.8	32.3	0.0	37.3	61.1	17.5
SOUTH DAKOTA						
EST. LANDINGS	4,003	5	836	2,661	3,682	249
% STD. ERROR	29.6	75.7	0.0	43.9	0.0	78.2
TENNESSEE						
EST. LANDINGS	66,117	6,700	922	41,442	3,682	4,229
% STD. ERROR	12.7	13.9	27.1	39.7	0.0	31.1
TEXAS						
EST. LANDINGS	465,884	62,291	161,486	148,778	10,477	85,023
% STD. ERROR	4.2	7.7	7.0	11.2	20.7	7.5
UTAH						
EST. LANDINGS	46,774	62,291	161,486	19,906	1,064	25,591
% STD. ERROR	15.7	0.0	0.0	27.5	69.5	15.8



9.8 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE  
BY STATE OF BASED ROTORCRAFT

PAGE 6 OF 6

STATE	TOTAL LANDINGS	LANDING FACILITY TYPE				OTHER
		AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS	OFFSHORE PLATFORM	
VERMONT EST. LANDINGS % STD. ERROR	3,077 33.6	2,458 29.2	161,486 0.0	262 95.4	1,064 0.0	86 65.5
VIRGINIA EST. LANDINGS % STD. ERROR	284,971 10.8	20,272 16.1	161,486 0.0	151,929 26.0	728 36.1	4,769 20.9
WASHINGTON EST. LANDINGS % STD. ERROR	229,904 9.5	17,718 15.8	161,486 0.0	30,557 32.3	491 48.9	112,037 8.3
WEST VIRGINIA EST. LANDINGS % STD. ERROR	21,380 13.2	4,599 25.3	161,486 0.0	2,356 51.5	742 50.8	11,790 23.9
WISCONSIN EST. LANDINGS % STD. ERROR	35,812 21.6	7,433 58.3	161,486 0.0	1,237 69.2	2,678 159.5	12,547 43.1
WYOMING EST. LANDINGS % STD. ERROR	12,766 18.5	4,188 21.9	161,486 0.0	4,056 35.1	2,678 0.0	2,557 25.0
ZPUERTO RICO EST. LANDINGS % STD. ERROR	12,766 0.0	4,188 0.0	161,486 0.0	4,056 0.0	2,678 0.0	2,557 0.0
TOTAL EST. LANDINGS % STD. ERROR	7,356,984 1.3	1,475,685 1.9	1,640,059 3.5	1,717,085 4.1	361,722 3.9	2,109,561 2.0

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

9.9 1989 ROTORCRAFT AVERAGE NUMBER OF LANDINGS PER FLIGHT HOUR  
BY ROTORCRAFT TYPE

PAGE 1 OF 1

ROTORCRAFT TYPE	TOTAL LANDINGS	TOTAL FLIGHT HOURS	AVG. NO. LANDINGS PER HOUR	PERCENT STANDARD ERROR
MANUFACTURER BUILT:				
PISTON TOTAL:	2,540,599	728,125	3.49	3.20
TURBINE: SINGLE ENGINE	3,417,711	1,532,270	2.23	1.56
TURBINE: MULTI - ENGINE	1,297,740	546,471	2.37	3.54
TURBINE TOTAL:	4,715,450	2,078,741	2.27	1.49
MANUFACTURER BUILT TOTAL:	7,256,049	2,806,866	2.59	1.47
AMATEUR BUILT TOTAL:	100,935	21,830	4.62	8.39
TOTAL - ALL AIRCRAFT:	7,356,984	2,828,697	2.60	1.45

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

9.10 1989 ROTORCRAFT AVERAGE NUMBER OF LANDINGS PER FLIGHT HOUR  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PAGE 1 OF 3

MANUFACTURER/ MODEL GROUP	TOTAL LANDINGS	TOTAL FLIGHT HOURS	AVG. NO. LANDINGS PER HOUR	PERCENT STANDARD ERROR
OTHER 1 (*)	63,380	9,901	6.40	67.00
OTHER 2 (*)	59,115	36,571	1.62	11.45
OTHER 3 (*)	131,582	69,599	1.89	3.71
OTHER 4 (*)	100,935	21,830	4.62	6.84
AERORSJ2	1,168	576	2.03	13.13
AEROSPAS355	114,070	58,868	1.94	5.77
AEROSPAS316	81,633	27,516	2.97	3.26
AGUSTA205	39,174	11,856	3.30	7.66
AGUSTAA109	46,880	15,372	3.05	10.80
AIRSPC18	2,638	939	2.81	31.59
BELL 204	16,938	5,621	3.01	4.47
BELL 206	2,389,016	979,907	2.44	1.90
BELL 212	149,377	56,155	2.66	7.62
BELL 222	57,306	26,601	2.15	4.59
BELL 412	73,275	41,651	1.76	8.67
BELL 47	523,008	155,156	3.37	3.88
BOLKMS105	220,348	107,506	2.05	15.16
BOLKMS117	248,605	54,321	4.58	8.65
ENSTRMF28 (1)	77,301	38,289	2.02	10.37
ENSTRMF28 (2)	46,215	22,891	2.02	14.12

9.10 1989 ROTORCRAFT AVERAGE NUMBER OF LANDINGS PER FLIGHT HOUR  
BY SDR ROTORCRAFT MANUFACTUREP/MODEL GROUP

PAGE 2 OF 3

MANUFACTURER/ MODEL GROUP	TOTAL LANDINGS	TOTAL FLIGHT HOURS	AVG. NO. LANDINGS PER HOUR	PERCENT STANDARD ERROR
H23/HTE	1,384	2,302	0.60	12.15
H34/'55	DIS	DIS	DIS	DIS
HILLERFH1100	4,383	3,871	1.13	10.53
HILLERUH12 (1)	374,222	74,173	5.05	5.85
HILLERUH12 (2)	20,224	4,008	5.05	23.91
HUGHES269	401,034	162,192	2.47	4.67
HUGHES369	403,117	245,743	1.64	3.79
HYNES B2	7,285	3,577	2.04	4.57
MACDOUG369	54,642	30,873	1.77	7.05
MILITARY204	36,129	17,028	2.12	8.45
MILITARY47 (1)	261,046	45,720	5.71	5.17
MILITARY47 (2)	3,791	664	5.71	40.04
MODFD47	58,779	11,898	4.94	12.16
ORLHELH19	71,066	7,014	10.13	42.19
ORLHEL58	110	220	0.50	0.00
ROBSINR22	608,745	176,948	3.44	5.13
SCHWZH269	48,492	27,400	1.77	7.78
SKRSKYS55	510	323	1.58	6.96
SKRSKYS58	8,053	4,073	1.98	9.01
SKRSKYS58T	35,458	12,170	2.91	20.22
SKRSKYS61	18,351	12,133	1.51	5.08

9.10 1989 ROTORCRAFT AVERAGE NUMBER OF LANDINGS PER FLIGHT HOUR  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PAGE 3 OF 3

MANUFACTURER/ MODEL GROUP	TOTAL LANDINGS	TOTAL FLIGHT HOURS	AVG. NO. LANDINGS PER HOUR	PERCENT STANDARD ERROR
SKRSKYS76	237,946	104,265	2.28	4.88
SNIAS 350	223,108	127,895	1.74	3.32
SNIAS SA341	4,767	2,958	1.61	12.58
TH55	12,921	4,584	2.82	5.35
TOMCAT	17,468	4,830	3.62	8.48
TOTAL	7,356,984	2,828,696	2.60	1.45

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

(\*) THE "OTHER" CATEGORIES REPRESENT:

- OTHER 1 - MANUFACTURER BUILT - PISTON
- OTHER 2 - MANUFACTURER BUILT - TURBINE-SINGLE ENGINE
- OTHER 3 - MANUFACTURER BUILT - TURBINE-MULTI ENGINE
- OTHER 4 - AMATEUR BUILT

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

(1) INDICATES MANUFACTURER BUILT - PISTON

(2) INDICATES MANUFACTURER BUILT - TURBINE-SINGLE ENGINE

9.11 1989 ROTORCRAFT AVERAGE NUMBER OF LANDINGS PER FLIGHT HOUR  
BY REGION OF BASED ROTORCRAFT

PAGE 1 OF 1

REGION	TOTAL LANDINGS	TOTAL FLIGHT HOURS	AVG. NO. LANDINGS PER HOUR	PERCENT STANDARD ERROR
ALASKAN	248,360	101,441	2.45	8.83
CENTRAL	127,037	62,804	2.02	10.71
EASTERN	951,290	281,562	3.38	5.41
GREAT LAKES	537,716	182,934	2.94	5.88
NEW ENGLAND	214,147	84,710	2.53	8.42
NORTHWEST MT.	729,578	271,558	2.69	5.73
SOUTHERN	829,721	342,154	2.42	5.56
SOUTHWESTERN	1,953,891	779,136	2.51	3.94
WESTERN-PACIFIC	1,674,813	664,113	2.52	3.80
TOTAL	7,356,984	2,810,971	2.62	1.45

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

9.12 1989 ROTORCRAFT AVERAGE NUMBER OF LANDINGS PER FLIGHT HOUR  
BY STATE OF BASED ROTORCRAFT

PAGE 1 OF 3

STATE	TOTAL LANDINGS	TOTAL FLIGHT HOURS	AVG. NO. LANDINGS PER HOUR	PERCENT STANDARD ERROR
ALABAMA	58,942	22,813	2.58	18.16
ALASKA	248,360	101,441	2.45	8.83
ARIZONA	113,332	69,153	1.64	11.35
ARKANSAS	52,902	7,641	6.92	23.62
CALIFORNIA	1,389,904	449,346	3.09	4.54
COLORADO	65,048	32,864	1.98	16.30
CONNECTICUT	83,388	23,984	3.48	15.91
DELAWARE	16,743	9,434	1.77	29.24
DIST. OF COLUMBIA	13,467	5,229	2.58	33.91
FLORIDA	439,532	168,751	2.60	8.83
GEORGIA	71,408	54,500	1.31	11.88
HAWAII	125,966	103,653	1.22	9.99
IDAHO	68,765	22,833	3.01	16.89
ILLINOIS	72,784	27,473	2.65	14.46
INDIANA	57,046	29,352	1.94	12.80
IOWA	31,237	12,490	2.50	29.80
KANSAS	19,351	11,266	1.72	20.96
KENTUCKY	40,443	15,884	2.55	15.26
LOUISIANA	1,267,777	511,658	2.48	5.81
MAINE	7,847	4,623	1.70	29.56
MARYLAND	34,753	31,635	1.10	11.63

9.12 1989 ROTORCRAFT AVERAGE NUMBER OF LANDINGS PER FLIGHT HOUR  
BY STATE OF BASED ROTORCRAFT

PAGE 2 OF 3

STATE	TOTAL LANDINGS	TOTAL FLIGHT HOURS	AVG. NO. LANDINGS PER HOUR	PERCENT STANDARD ERROR
MASSACHUSETTS	86,794	39,631	2.19	12.99
MICHIGAN	112,111	36,169	3.10	16.03
MINNESOTA	49,050	17,862	2.75	16.05
MISSISSIPPI	31,382	12,107	2.59	23.19
MISSOURI	69,432	38,258	1.81	14.61
MONTANA	33,407	18,796	1.78	22.53
NEBRASKA	2,308	790	2.92	47.77
NEVADA	44,607	41,962	1.06	19.88
NEW HAMPSHIRE	25,031	13,568	1.84	15.29
NEW JERSEY	188,842	59,221	3.19	10.22
NEW MEXICO	12,464	7,093	1.76	39.32
NEW YORK	177,791	67,922	2.62	9.72
NORTH CAROLINA	36,121	22,399	1.61	15.63
NORTH DAKOTA	26,892	8,013	3.36	30.05
OHIO	148,248	53,608	2.77	11.53
OKLAHOMA	70,067	21,549	3.25	16.98
OREGON	254,448	96,421	2.64	8.37
PENNSYLVANIA	218,932	70,913	3.09	10.80
RHODE ISLAND	5,490	2,041	2.69	28.10
SOUTH CAROLINA	64,675	21,525	3.00	21.45
SOUTH DAKOTA	4,003	1,838	2.18	42.15



9.12 1989 ROTORCRAFT AVERAGE NUMBER OF LANDINGS PER FLIGHT HOUR  
BY STATE OF BASED ROTORCRAFT

PAGE 3 OF 3

STATE	TOTAL LANDINGS	TOTAL FLIGHT HOURS	AVG. NO. LANDINGS PER HOUR	PERCENT STANDARD ERROR
TENNESSEE	66,117	24,176	2.73	15.78
TEXAS	465,884	231,197	2.02	5.67
UTAH	46,774	22,335	2.09	21.05
VERMONT	3,077	862	3.57	40.74
VIRGINIA	284,971	24,649	11.56	16.16
WASHINGTON	229,904	71,586	3.21	12.37
WEST VIRGINIA	21,380	12,559	1.70	17.60
WISCONSIN	35,812	8,619	4.16	27.34
WYOMING	12,766	6,723	1.90	25.11
PUERTO RICO	0	0	0.00	0.00
TOTAL	7,356,984	2,810,972	2.62	1.45

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

9.13 1989 ROTORCRAFT TOTAL LANDINGS BY EXPANDED USE CATEGORY  
BY ROTORCRAFT TYPE

PAGE 1 OF 2

PRIMARY USE

ROTORCRAFT TYPE	PER- SONAL	EMERGENCY UNDER FAR 135	MEDICAL SERVICE NOT UND FAR 135	AIR TAXI	COMMUTER CARRIER	CORP- ORATE	INSTRUC- TIONAL
MANUFACTURER BUILT:							
PISTON TOTAL:							
EST. LANDINGS	77,678	13,036	5,612	29,201	0	16,181	891,914
% STD. ERROR	8.2	22.8	36.7	16.9	0.0	22.4	5.4
TURBINE: SINGLE ENGINE							
EST. LANDINGS	30,709	106,871	115,099	1,278,304	28,111	649,769	143,741
% STD. ERROR	9.2	8.1	9.1	2.5	22.3	6.6	12.9
TURBINE: MULTI - ENGINE							
EST. LANDINGS	5,893	174,332	115,691	454,416	11,878	354,870	78,225
% STD. ERROR	36.5	13.2	13.0	6.4	20.6	6.8	30.3
TURBINE TOTAL:							
EST. LANDINGS	36,601	281,202	230,790	1,732,719	39,989	1,004,639	221,966
% STD. ERROR	8.7	7.9	7.8	2.5	17.1	4.9	12.1
MANUFACTURER BUILT TOTAL:							
EST. LANDINGS	114,279	294,238	236,402	1,761,921	39,989	1,020,820	1,113,880
% STD. ERROR	6.3	7.6	7.5	2.5	17.1	4.8	5.0
AMATEUR BUILT:							
EST. LANDINGS	35,727	4,642	0	0	0	0	6,446
% STD. ERROR	5.9	26.7	0.0	0.0	0.0	0.0	27.8
TOTAL							
EST. LANDINGS	150,007	298,880	236,402	1,761,921	39,989	1,020,820	1,120,327
% STD. ERROR	4.6	7.4	7.5	2.5	17.1	4.8	5.0

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.  
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

CONTINUED ON NEXT PAGE

9.13 1989 ROTORCRAFT TOTAL LANDINGS BY EXPANDED USE CATEGORY  
BY ROTORCRAFT TYPE

PAGE 2 OF 2

PRIMARY USE (CONTINUED)

ROTORCRAFT TYPE	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI- NESS	OTHER	TOTAL
MANUFACTURER BUILT:							
PISTON TOTAL:							
EST. LANDINGS	1,134,870	433,207	41,159	18,057	30,806	8,108	2,525,425
% STD. ERROR	6.1	7.7	30.0	26.0	9.7	31.2	5.0
TURBINE: SINGLE ENGINE							
EST. LANDINGS	197,535	604,822	150,660	39,267	59,886	22,555	3,414,216
% STD. ERROR	10.3	3.4	9.6	14.5	7.5	16.6	1.6
TURBINE: MULTI - ENGINE							
EST. LANDINGS	4,336	18,253	36,950	2,381	12,821	9,340	1,292,008
% STD. ERROR	58.8	27.5	9.7	56.5	16.8	26.5	3.7
TURBINE TOTAL:							
EST. LANDINGS	201,871	623,075	187,610	41,649	72,707	31,894	4,706,224
% STD. ERROR	10.2	3.4	7.9	14.0	6.7	13.9	1.5
MANUFACTURER BUILT TOTAL:							
EST. LANDINGS	1,336,742	1,056,282	228,769	59,706	103,513	40,002	7,231,646
% STD. ERROR	5.2	3.6	9.1	12.8	5.5	14.2	2.0
AMATEUR BUILT:							
EST. LANDINGS	0	1,036	0	0	1,172	5,424	144,226
% STD. ERROR	0.0	49.5	0.0	0.0	58.3	23.2	27.2
TOTAL							
EST. LANDINGS	1,336,742	1,057,318	228,769	59,706	104,684	45,426	7,375,872
% STD. ERROR	5.2	3.6	9.1	12.8	5.5	12.3	2.1

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.  
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

9.14 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE  
BY ROTORCRAFT TYPE

PAGE 1 OF 1

ROTORCRAFT TYPE	TOTAL ACTIVE ROTORCRAFT	BASE FACILITY TYPE			IN- ACTIVE
		AIRPORTS	HELIPORTS	OTHER	
MANUFACTURER BUILT:					
PISTON TOTAL:					
EST. NO. ACTIVE	2,684	1,565	594	525	1,265
% STD. ERROR	1.2	1.8	4.0	4.4	
EST. % ACTIVE	68.0				
TURBINE: SINGLE ENGINE					
EST. NO. ACTIVE	3,248	1,687	1,324	237	347
% STD. ERROR	0.5	1.4	1.6	5.4	
EST. % ACTIVE	90.3				
TURBINE: MULTI - ENGINE					
EST. NO. ACTIVE	984	354	586	44	85
% STD. ERROR	0.7	4.3	2.8	18.4	
EST. % ACTIVE	92.0				
TURBINE TOTAL:					
EST. NO. ACTIVE	4,232	2,040	1,911	281	432
% STD. ERROR	0.4	1.4	1.4	5.4	
EST. % ACTIVE	90.7				
MANUFACTURER BUILT TOTAL:					
EST. NO. ACTIVE	6,916	3,605	2,505	806	1,697
% STD. ERROR	0.5	1.1	1.4	3.4	
EST. % ACTIVE	80.3				
AMATEUR BUILT:					
EST. NO. ACTIVE	572	254	20	298	1,218
% STD. ERROR	3.5	5.5	25.9	4.7	
EST. % ACTIVE	31.9				
TOTAL					
EST. NO. ACTIVE	7,488	3,859	2,525	1,104	2,915
% STD. ERROR	0.6	1.1	1.5	2.8	
EST. % ACTIVE	72.0				

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

9.15 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PAGE 1 OF 6

MANUFACTURER/ MODEL GROUP	TOTAL ACTIVE ROTORCRAFT	BASE FACILITY TYPE			IN- ACTIVE
		AIRPORTS	HELIPORTS	OTHER	
OTHER 1 (*)					
EST. NO. ACTIVE	93	81	7	5	33
% STD. ERROR	0.0	13.9	123.6	151.7	
EST. % ACTIVE	73.8				
OTHER 2 (*)					
EST. NO. ACTIVE	91	56	24	11	22
% STD. ERROR	0.0	8.8	18.4	29.8	
EST. % ACTIVE	80.7				
OTHER 3 (*)					
EST. NO. ACTIVE	111	52	54	5	31
% STD. ERROR	0.0	9.7	9.4	42.9	
EST. % ACTIVE	78.4				
OTHER 4 (*)					
EST. NO. ACTIVE	572	254	20	298	1,218
% STD. ERROR	0.0	5.5	25.9	4.7	
EST. % ACTIVE	31.9				
AERORSJ2					
EST. NO. ACTIVE	20	11	0	9	18
% STD. ERROR	0.0	19.0	0.0	24.4	
EST. % ACTIVE	51.7				
AEROSPAS355					
EST. NO. ACTIVE	108	DIS	DIS	DIS	1
% STD. ERROR	0.0				
EST. % ACTIVE	99.0				
AEROSPSA316					
EST. NO. ACTIVE	61	18	44	0	30
% STD. ERROR	0.0	23.4	9.4	0.0	
EST. % ACTIVE	67.4				
AGUSTA205					
EST. NO. ACTIVE	30	DIS	DIS	DIS	2
% STD. ERROR	0.0				
EST. % ACTIVE	95.0				
AGUSTAA109					
EST. NO. ACTIVE	66	DIS	DIS	DIS	0
% STD. ERROR	0.0				
EST. % ACTIVE	100.0				

9.15 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PAGE 2 OF 6

MANUFACTURER/ MODEL GROUP	TOTAL ACTIVE	BASE FACILITY TYPE			OTHER	IN- ACTIVE
		AIRPORTS	HELIPORTS			
AIRSPC18 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	15 0.0 64.3	DIS	DIS		DIS	8
ARCRNEH37 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	0 0.0 0.0	0 0.0	0 0.0		0 0.0	0
BELL 204 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	22 0.0 84.3	14 22.4	0 0.0		8 40.5	4
BELL 206 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	1,810 0.0 95.3	832 1.6	872 1.6		105 6.1	90
BELL 212 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	106 0.0 90.2	DIS	DIS		DIS	11
BELL 222 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	70 0.0 84.3	34 6.7	31 7.3		5 23.6	13
BELL 412 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	61 0.0 100.0	DIS	DIS		DIS	0
BELL 47 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	579 0.0 69.1	297 4.9	181 7.4		101 10.8	259
BOLKMS105 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	171 0.0 97.7	29 31.9	133 7.7		8 63.2	4

9.15 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PAGE 3 OF 6

MANUFACTURER/ MODEL GROUP	TOTAL ACTIVE	BASE FACILITY TYPE			IN- ACTIVE
		AIRPORTS	HELIPORTS	OTHER	
BOLKMS117					
EST. NO. ACTIVE	110	DIS	DIS	DIS	3
% STD. ERROR	0.0				
EST. % ACTIVE	97.2				
ENSTRMF28 (1)					
EST. NO. ACTIVE	219	137	48	34	80
% STD. ERROR	0.0	5.4	13.1	16.4	
EST. % ACTIVE	73.2				
ENSTRMF28 (2)					
EST. NO. ACTIVE	112	79	23	9	10
% STD. ERROR	0.0	5.9	18.1	32.0	
EST. % ACTIVE	91.5				
H23/HTE					
EST. NO. ACTIVE	12	0	0	12	24
% STD. ERROR	0.0	0.0	0.0	0.0	
EST. % ACTIVE	32.1				
H34/55					
EST. NO. ACTIVE	DIS	DIS	DIS	DIS	DIS
% STD. ERROR	11.4				
EST. % ACTIVE					
HILLERFH1100					
EST. NO. ACTIVE	29	DIS	DIS	DIS	35
% STD. ERROR	0.0				
EST. % ACTIVE	45.2				
HILLERUH12 (1)					
EST. NO. ACTIVE	351	188	68	95	207
% STD. ERROR	0.0	6.1	13.3	10.7	
EST. % ACTIVE	63.0				
HILLERUH12 (2)					
EST. NO. ACTIVE	22	7	5	9	5
% STD. ERROR	0.0	21.7	28.8	17.8	
EST. % ACTIVE	80.2				
HUGHES269					
EST. NO. ACTIVE	476	243	142	91	200
% STD. ERROR	0.0	4.1	6.4	8.6	
EST. % ACTIVE	70.4				

9.15 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

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MANUFACTURER/ MODEL GROUP	TOTAL ACTIVE	BASE FACILITY TYPE			IN- ACTIVE
		AIRPORTS	HELIPORTS	OTHER	
HUGHES369 EST. NO. ACTIVE & STD. ERROR EST. & ACTIVE	551 0.0 91.8	326 3.4	147 6.8	77 10.1	49
HYNES B2 EST. NO. ACTIVE & STD. ERROR EST. & ACTIVE	53 0.0 41.9	DIS	DIS	DIS	73
MACDOUG369 EST. NO. ACTIVE & STD. ERROR EST. & ACTIVE	61 0.0 100.0	DIS	DIS	DIS	0
MILITARY204 EST. NO. ACTIVE & STD. ERROR EST. & ACTIVE	142 0.0 70.8	121 6.7	16 45.2	5 80.0	59
MILITARY47 (1) EST. NO. ACTIVE & STD. ERROR EST. & ACTIVE	219 0.0 58.5	123 6.1	51 12.4	45 13.5	156
MILITARY47 (2) EST. NO. ACTIVE & STD. ERROR EST. & ACTIVE	15 0.0 76.9	0 0.0	15 0.0	0 0.0	5
MODFD47 EST. NO. ACTIVE & STD. ERROR EST. & ACTIVE	37 0.0 70.4	17 25.6	8 42.8	12 32.4	16
ORLHELH19 EST. NO. ACTIVE & STD. ERROR EST. & ACTIVE	44 0.0 60.3	DIS	DIS	DIS	29
ORLHEL58 EST. NO. ACTIVE & STD. ERROR EST. & ACTIVE	11 0.0 33.3	11 0.0	0 0.0	0 0.0	22



9.15 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

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MANUFACTURER/ MODEL GROUP	TOTAL ACTIVE	BASE FACILITY TYPE			IN- ACTIVE
		AIRPORTS	HELIPORTS	OTHER	
ROBSINR22 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	395 0.0 96.9	311 2.0	44 11.0	41 11.5	13
SCHWZH269 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	48 0.0 89.6	19 7.9	23 6.8	6 17.3	6
SKRSKYS55 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	7 0.0 20.0	DIS	DIS	DIS	27
SKRSKYS58 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	35 0.0 48.6	DIS	DIS	DIS	37
SKRSKYS58T EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	27 0.0 71.4	16 18.6	12 25.0	0 0.0	11
SKRSKYS61 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	14 0.0 49.6	DIS	DIS	DIS	14
SKRSKYS76 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	167 0.0 95.6	DIS	DIS	DIS	8
SNIAS 350 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	255 0.0 94.0	132 4.9	117 5.5	6 33.3	16
SNIAS SA318 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	0 0.0 0.0	0 0.0	0 0.0	0 0.0	0

9.15 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PAGE 6 OF 6

MANUFACTURER/ MODEL GROUP	TOTAL ACTIVE	BASE FACILITY TYPE			IN- ACTIVE
		AIRPORTS	HELIPORTS	OTHER	
SNIAS SA341					
EST. NO. ACTIVE	20	DIS	DIS	DIS	9
% STD. ERROR	0.0				
EST. % ACTIVE	68.7				
TH55					
EST. NO. ACTIVE	42	DIS	DIS	DIS	18
% STD. ERROR	0.0				
EST. % ACTIVE	70.1				
TOMCAT					
EST. NO. ACTIVE	24	DIS	DIS	DIS	14
% STD. ERROR	0.0				
EST. % ACTIVE	63.8				
TOTAL	7,488	3,859	2,525	1,104	2,915
EST. NO. ACTIVE	0.6	1.1	1.5	2.8	
% STD. ERROR	72.0				

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

(\*) THE "OTHER" CATEGORIES REPRESENT:

- OTHER 1 - MANUFACTURER BUILT - PISTON
- OTHER 2 - MANUFACTURER BUILT - TURBINE-SINGLE ENGINE
- OTHER 3 - MANUFACTURER BUILT - TURBINE-MULTI ENGINE
- OTHER 4 - AMATEUR BUILT

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

(1) INDICATES MANUFACTURER BUILT - PISTON

(2) INDICATES MANUFACTURER BUILT - TURBINE-SINGLE ENGINE

9.16 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE  
BY REGION OF BASED ROTORCRAFT

PAGE 1 OF 2

REGION	TOTAL ACTIVE ROTORCRAFT	BASE FACILITY TYPE			IN- ACTIVE
		AIRPORTS	HELIPORTS	OTHER	
ALASKAN EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	248 5.3 86.1	126 8.4	48 14.2	26 20.2	40
CENTRAL EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	216 6.4 64.3	100 10.1	85 13.3	41 17.1	120
EASTERN EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	1,004 2.8 75.5	575 3.9	345 6.5	117 9.7	325
GREAT LAKES EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	752 3.4 62.2	399 5.7	231 7.3	129 9.7	456
NEW ENGLAND EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	292 4.8 77.5	205 6.5	63 12.0	32 18.7	85
NORTHWEST MT. EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	882 3.1 69.9	441 5.4	192 7.1	163 9.4	380
SOUTHERN EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	1,223 2.6 69.6	728 4.2	296 5.6	235 7.4	535
SOUTHWESTERN EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	1,413 2.1 75.7	402 5.9	936 2.5	146 9.0	454

9.16 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE  
BY REGION OF BASED ROTORCRAFT

PAGE 2 OF 2

REGION	TOTAL ACTIVE ROTORCRAFT	BASE FACILITY TYPE			IN- ACTIVE
		AIRPORTS	HELIPORTS	OTHER	
WESTERN-PACIFIC EST. NO. ACTIVE & STD. ERROR EST. & ACTIVE	1,458 2.1 73.7	919 2.9	329 5.2	178 8.0	521
TOTAL EST. NO. ACTIVE & STD. ERROR EST. & ACTIVE	7,488 0.6 72.0	3,859 1.1	2,525 1.5	1,104 2.8	2,915

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

9.17 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE  
BY  
STATE OF BASED ROTORCRAFT

PAGE 1 OF 6

STATE	TOTAL ACTIVE	BASE FACILITY TYPE			IN- ACTIVE
		AIRPORTS	HELIPORTS	OTHER	
ALABAMA					
EST. NO. ACTIVE	96	66	24	8	69
% STD. ERROR	10.6	14.8	20.2	41.7	
EST. % ACTIVE	58.0				
ALASKA					
EST. NO. ACTIVE	248	126	48	26	40
% STD. ERROR	5.3	8.4	14.2	20.2	
EST. % ACTIVE	86.1				
ARIZONA					
EST. NO. ACTIVE	176	110	29	37	120
% STD. ERROR	7.6	8.7	17.9	18.0	
EST. % ACTIVE	59.3				
ARKANSAS					
EST. NO. ACTIVE	37	25	5	12	28
% STD. ERROR	14.9	21.2	37.2	32.4	
EST. % ACTIVE	57.5				
CALIFORNIA					
EST. NO. ACTIVE	1,072	688	251	129	352
% STD. ERROR	2.5	3.4	6.0	9.5	
EST. % ACTIVE	75.3				
COLORADO					
EST. NO. ACTIVE	101	70	25	12	47
% STD. ERROR	10.2	15.8	19.8	24.8	
EST. % ACTIVE	68.4				
CONNECTICUT					
EST. NO. ACTIVE	66	DIS	DIS	DIS	12
% STD. ERROR	10.3				
EST. % ACTIVE	85.0				
DELAWARE					
EST. NO. ACTIVE	33	DIS	DIS	DIS	6
% STD. ERROR	17.8				
EST. % ACTIVE	85.8				
DIST. OF COLUMBIA					
EST. NO. ACTIVE	32	34	6	0	0
% STD. ERROR	22.9	25.7	65.2	0.0	
EST. % ACTIVE	100.0				

9.17 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE  
BY  
STATE OF BASED ROTORCRAFT

PAGE 2 OF 6

STATE	TOTAL ACTIVE	BASE FACILITY TYPE			IN- ACTIVE
		AIRPORTS	HELIPORTS	OTHER	
FLORIDA					
EST. NO. ACTIVE	635	414	90	123	239
% STD. ERROR	4.3	6.4	11.6	9.9	
EST. % ACTIVE	72.6				
GEORGIA					
EST. NO. ACTIVE	127	69	47	18	65
% STD. ERROR	7.3	9.7	11.0	26.3	
EST. % ACTIVE	66.2				
HAWAII					
EST. NO. ACTIVE	126	70	17	5	24
% STD. ERROR	6.5	9.4	19.7	53.9	
EST. % ACTIVE	83.7				
IDAHO					
EST. NO. ACTIVE	86	47	23	19	22
% STD. ERROR	9.3	14.4	18.3	26.5	
EST. % ACTIVE	80.0				
ILLINOIS					
EST. NO. ACTIVE	137	71	49	20	95
% STD. ERROR	10.4	20.8	16.3	24.0	
EST. % ACTIVE	58.9				
INDIANA					
EST. NO. ACTIVE	124	69	30	31	58
% STD. ERROR	7.9	11.7	18.5	21.2	
EST. % ACTIVE	68.3				
IOWA					
EST. NO. ACTIVE	46	10	29	8	46
% STD. ERROR	16.7	30.8	27.4	44.3	
EST. % ACTIVE	50.2				
KANSAS					
EST. NO. ACTIVE	45	28	15	8	28
% STD. ERROR	13.5	18.3	32.6	41.1	
EST. % ACTIVE	61.2				
KENTUCKY					
EST. NO. ACTIVE	68	56	11	12	18
% STD. ERROR	8.8	11.0	23.9	26.5	
EST. % ACTIVE	79.4				

9.17 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE  
By  
STATE OF BASED ROTORCRAFT

PAGE 3 OF 6

STATE	TOTAL ACTIVE	BASE FACILITY TYPE			IN- ACTIVE
		AIRPORTS	HELIPORTS	OTHER	
LOUISIANA EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	645 3.0 91.6	54 18.7	647 3.1	18 29.3	59
MAINE EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	27 20.1 63.9	22 28.3	0 0.0	5 52.2	15
MARYLAND EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	101 7.6 90.7	56 10.6	7 35.3	22 22.1	10
MASSACHUSETTS EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	107 8.1 73.6	96 9.4	17 26.4	7 35.1	38
MICHIGAN EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	151 7.2 70.1	101 10.2	34 16.0	31 21.2	64
MINNESOTA EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	73 10.6 52.0	34 14.4	15 31.7	6 41.4	68
MISSISSIPPI EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	51 12.8 82.7	46 15.9	10 15.8	10 25.7	11
MISSOURI EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	114 8.5 75.3	48 14.5	41 15.5	25 20.6	37
MONTANA EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	69 15.8 70.8	43 21.2	5 48.0	9 96.9	28

9.17 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE  
BY  
STATE OF BASED ROTORCRAFT

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STATE	TOTAL ACTIVE	BASE FACILITY TYPE			IN- ACTIVE
		AIRPORTS	HELIPORTS	OTHER	
NEBRASKA					
EST. NO. ACTIVE	11	13	0	0	8
& STD. ERROR	29.9	31.5	0.0	0.0	
EST. % ACTIVE	57.2				
NEVADA					
EST. NO. ACTIVE	85	51	33	7	24
& STD. ERROR	10.9	16.6	18.6	44.3	
EST. % ACTIVE	78.1				
NEW HAMPSHIRE					
EST. NO. ACTIVE	67	23	27	11	10
& STD. ERROR	9.4	18.8	15.3	27.5	
EST. % ACTIVE	87.4				
NEW JERSEY					
EST. NO. ACTIVE	202	151	57	7	37
& STD. ERROR	6.5	6.8	19.4	44.8	
EST. % ACTIVE	84.7				
NEW MEXICO					
EST. NO. ACTIVE	40	23	8	7	24
& STD. ERROR	25.1	45.2	29.7	44.0	
EST. % ACTIVE	62.3				
NEW YORK					
EST. NO. ACTIVE	239	118	68	44	94
& STD. ERROR	5.7	10.2	11.6	15.8	
EST. % ACTIVE	71.8				
NORTH CAROLINA					
EST. NO. ACTIVE	88	42	23	23	47
& STD. ERROR	9.5	17.6	16.7	21.5	
EST. % ACTIVE	65.2				
NORTH DAKOTA					
EST. NO. ACTIVE	23	DIS	DIS	DIS	5
& STD. ERROR	19.4				
EST. % ACTIVE	81.5				
OHIO					
EST. NO. ACTIVE	190	65	87	34	106
& STD. ERROR	7.1	11.7	13.1	19.0	
EST. % ACTIVE	64.1				



9.17 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE  
BY  
STATE OF BASED ROTORCRAFT

PAGE 5 OF 6

STATE	TOTAL ACTIVE	BASE FACILITY TYPE			IN- ACTIVE
		AIRPORTS	HELIPORTS	OTHER	
OKLAHOMA					
EST. NO. ACTIVE	92	60	21	16	69
% STD. ERROR	11.9	19.3	24.5	29.4	
EST. % ACTIVE	57.2				
OREGON					
EST. NO. ACTIVE	282	121	63	41	126
% STD. ERROR	5.4	9.4	14.3	17.0	
EST. % ACTIVE	69.2				
PENNSYLVANIA					
EST. NO. ACTIVE	258	86	160	25	149
% STD. ERROR	6.2	10.4	9.0	23.1	
EST. % ACTIVE	63.3				
RHODE ISLAND					
EST. NO. ACTIVE	10	DIS	DIS	DIS	5
% STD. ERROR	21.4				
EST. % ACTIVE	67.5				
SOUTH CAROLINA					
EST. NO. ACTIVE	67	12	26	30	50
% STD. ERROR	13.3	33.1	21.0	28.0	
EST. % ACTIVE	57.5				
SOUTH DAKOTA					
EST. NO. ACTIVE	9	DIS	DIS	DIS	3
% STD. ERROR	29.5				
EST. % ACTIVE	75.0				
TENNESSEE					
EST. NO. ACTIVE	92	23	71	10	37
% STD. ERROR	8.5	17.4	11.2	31.1	
EST. % ACTIVE	71.6				
TEXAS					
EST. NO. ACTIVE	599	240	255	93	274
% STD. ERROR	3.4	6.3	5.9	10.8	
EST. % ACTIVE	68.6				
UTAH					
EST. NO. ACTIVE	70	11	20	10	35
% STD. ERROR	10.4	33.2	20.4	30.1	
EST. % ACTIVE	66.4				

9.17 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE  
BY  
STATE OF BASED ROTORCRAFT

PAGE 6 OF 6

STATE	TOTAL ACTIVE	BASE FACILITY TYPE			IN- ACTIVE
		AIRPORTS	HELIPORTS	OTHER	
VERMONT					
EST. NO. ACTIVE	15	DIS	DIS	DIS	5
% STD. ERROR	23.9				
EST. % ACTIVE	75.7				
VIRGINIA					
EST. NO. ACTIVE	97	76	28	10	26
% STD. ERROR	11.2	12.2	34.6	33.7	
EST. % ACTIVE	79.0				
WASHINGTON					
EST. NO. ACTIVE	233	127	54	63	116
% STD. ERROR	6.6	11.1	14.1	13.1	
EST. % ACTIVE	66.8				
WEST VIRGINIA					
EST. NO. ACTIVE	41	28	11	7	3
% STD. ERROR	11.6	15.6	27.7	31.5	
EST. % ACTIVE	92.6				
WISCONSIN					
EST. NO. ACTIVE	45	24	8	6	57
% STD. ERROR	15.6	22.4	38.5	43.6	
EST. % ACTIVE	44.0				
WYOMING					
EST. NO. ACTIVE	40	DIS	DIS	DIS	6
% STD. ERROR	14.0				
EST. % ACTIVE	87.9				
PUERTO RICO					
EST. NO. ACTIVE	0	0	0	0	0
% STD. ERROR	0.0	0.0	0.0	0.0	
EST. % ACTIVE	0.0				
TOTAL					
EST. NO. ACTIVE	7,488	3,859	2,525	1,104	2,915
% STD. ERROR	0.6	1.1	1.5	2.8	
EST. % ACTIVE	72.0				

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

#### 4. PRIMARY USE BY EXPANDED USE CATEGORY

The rotorcraft fleet is used to provide an array of services, such as air taxi, commuter carrier, personal, business, instructional, and emergency medical service. This section considers the major uses of the rotorcraft fleet. Twelve expanded use categories for rotorcraft are defined in Appendix F.

This section consists of eight tables and one figure. The even numbered Tables, 9.18-9.24, present the estimated number of active and inactive rotorcraft, by expanded use category, in four different ways, by: 1) aircraft type; 2) SDR Rotorcraft Manufacturer/Model Group; 3) region of based rotorcraft; and 4) state of based rotorcraft. The odd numbered Tables, 9.19-9.25, present the estimated total hours, by expanded use category, in the same four ways listed above.

Figure 9.8 displays two graphs. The first one shows the number of rotorcraft in each primary use category. The second graph depicts the total flight hours by rotorcraft in each expanded use category.

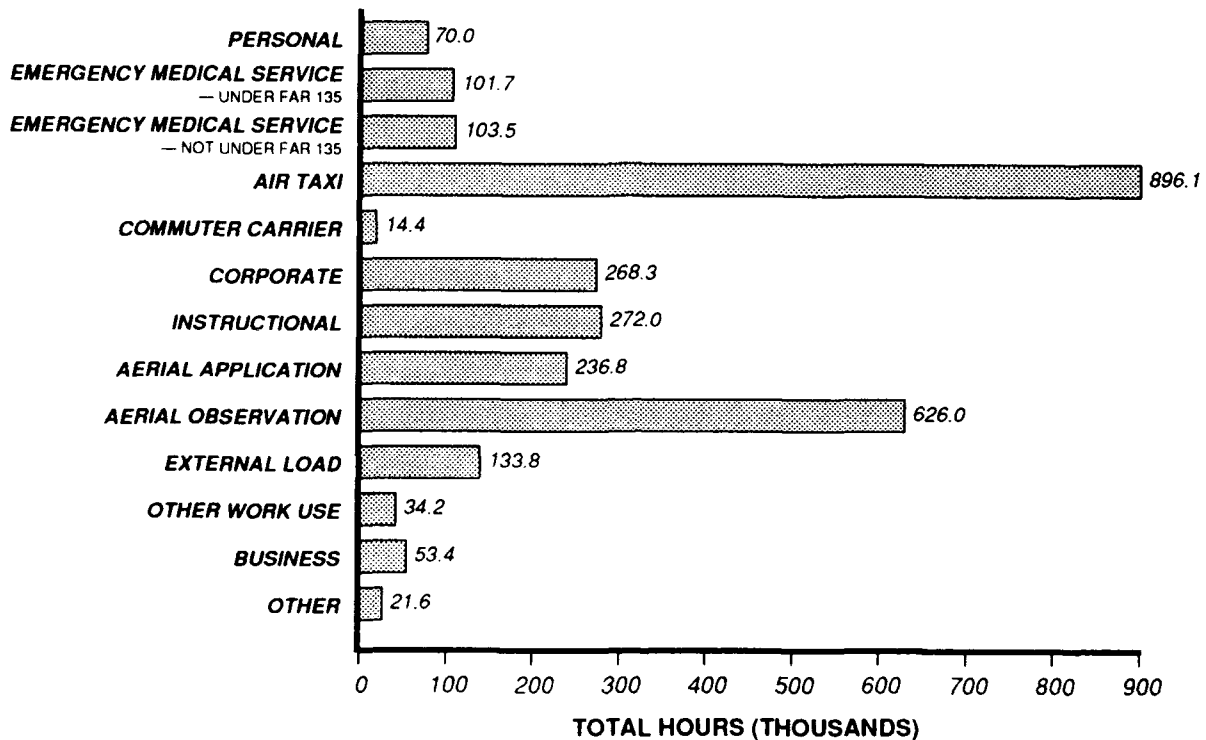
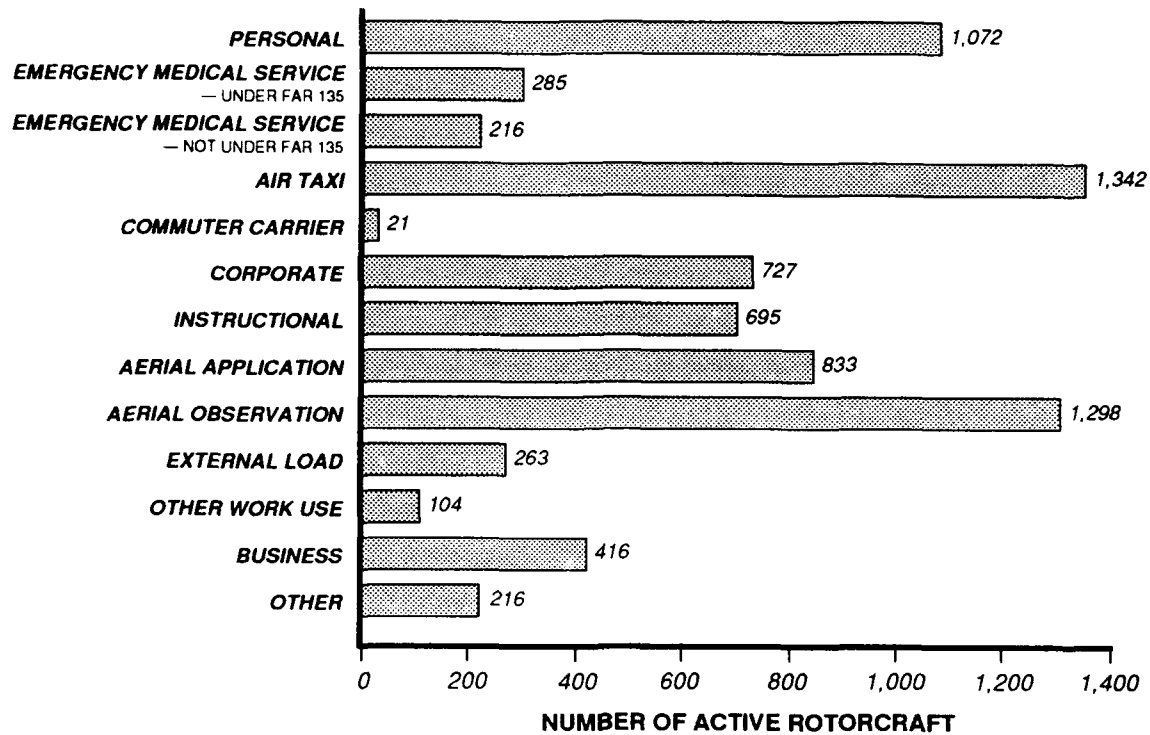
Some key observations to be drawn from Tables 9.18-9.25 and the figure in this chapter are:

- o Approximately 72 percent of the registered rotorcraft fleet were active in 1989.
- o Air taxi is the most popular primary use of the active rotorcraft fleet. Almost 18 percent are primarily used in this category. The second and third most popular primary uses are aerial observation and personal - 17 percent and 14 percent, respectively.
- o About 28 percent of the active single engine turbine rotorcraft and almost 38 percent of the active multiengine turbine rotorcraft are used primarily for air taxi purposes. Together, 32 percent of the turbine rotorcraft are used for air taxi.
- o As one might expect, personal use is the most popular primary use of amateur built rotorcraft. More than 68 percent of the amateur rotorcraft were used primarily for this purpose.
- o Aerial observation is the most popular primary use in five out of nine regions: the Southern region, 39 percent; the Central region, 34 percent; the Great Lakes region, 33 percent; the Western-Pacific region, 33 percent; and the Eastern region, 24 percent.
- o The rotorcraft fleet flew over 896 thousand air taxi hours in 1989. The next closest use category, aerial observation, totaled more than 626 thousand hours.
- o Instructional use is the largest use of piston rotorcraft. Almost 31 percent (224,075 hours) of the total hours flown by piston rotorcraft were used primarily for this purpose.

- o The largest use of both the single and multiengine turbine rotorcraft was air taxi, with 40 percent and 49 percent of the total hours flown, respectively, comprising this use category.
- o In both the Alaskan and Southwestern regions, the largest use is air taxi, accounting for 79 percent and 72 percent, respectively, of the total hours flown in those regions. Even though the Southwest region has only 9 percent of the active fleet, rotorcraft in this region accounted for over 60 percent of the air taxi hours flown.
- o The largest use of rotorcraft in the Northwest Mountain region is external load, with 26 percent of its total hours flown in this category. In the New England region, the largest use of rotorcraft is split between corporate and instructional use categories, with 28 percent of the region's total hours flown in each category.

Figure 9.8

# 1989 NUMBER OF ROTORCRAFT AND TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY



SOURCE: Tables 9.18 and 9.19

9.18 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY  
BY ROTORCRAFT TYPE

PAGE 1 OF 1

		ACTIVE USE														IN- ACTIVE
ROTORCRAFT TYPE	TOTAL ACTIVE	PER- SONAL	EMERG FAR135	MED SVCE NOT UND FAR135	AIR TAXI	COMMUTR CARRIER	CORP- ORATE	INSTRUC TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSS- NESS	OTHER		
MANUFACTURER BUILT:																
PISTON TOTAL:																
EST. NO. ACTIVE	2,684	462	37	12	50	0	44	530	610	553	87	46	189	64	1,265	
% STD. ERROR	1.2	5.2	15.6	29.1	14.4	0.0	13.6	3.3	4.1	3.3	18.6	14.2	6.3	23.6		
EST. % ACTIVE	68.0															
TURBINE: SINGLE ENGINE																
EST. NO. ACTIVE	3,248	140	103	109	917	16	459	110	211	708	139	56	200	80	347	
% STD. ERROR	0.5	6.8	7.1	8.2	1.8	15.1	3.2	8.9	6.2	2.5	7.3	10.3	5.4	12.4		
EST. % ACTIVE	90.3															
TURBINE: MULTI - ENGINE																
EST. NO. ACTIVE	984	13	111	95	375	5	224	34	12	28	35	2	23	27	85	
% STD. ERROR	0.7	33.2	12.0	12.4	4.3	19.0	5.2	25.0	29.8	26.6	11.4	56.5	16.5	18.4		
EST. % ACTIVE	92.0															
TURBINE TOTAL:																
EST. NO. ACTIVE	4,232	153	215	204	1,292	21	683	144	223	736	174	58	223	107	432	
% STD. ERROR	0.4	6.8	7.1	7.3	1.8	12.3	2.7	9.0	6.1	2.6	6.3	10.1	5.2	10.4		
EST. % ACTIVE	90.7															
MANUFACTURER BUILT TOTAL:																
EST. NO. ACTIVE	6,916	615	251	216	1,342	21	727	673	833	1,289	261	104	412	171	1,697	
% STD. ERROR	0.5	4.2	6.5	7.1	1.8	12.3	2.7	3.3	3.4	2.0	7.5	8.4	4.0	11.0		
EST. % ACTIVE	80.3															
AMATEUR BUILT:																
EST. NO. ACTIVE	572	456	34	0	0	0	0	22	0	9	3	0	4	45	1,218	
% STD. ERROR	3.5	2.3	18.3	0.0	0.0	0.0	0.0	23.2	0.0	36.8	68.0	0.0	58.3	15.8		
EST. % ACTIVE	31.9															
TOTAL																
EST. NO. ACTIVE	7,488	1,072	285	216	1,342	21	727	695	833	1,298	263	104	416	216	2,915	
% STD. ERROR	0.6	2.6	6.1	7.1	1.8	12.3	2.7	3.2	3.4	2.0	7.5	8.4	4.0	9.3		
EST. % ACTIVE	72.0															

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.  
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

9.19 1989 ROTORCRAFT TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY  
BY ROTORCRAFT TYPE

PAGE 1 OF 1

PRIMARY USE

ROTORCRAFT TYPE	PER- SONAL	EMERG UNDER FAR	MED SVCE NOT UND FAR 135	AIR TAXI	COMPUTER CARRIER	CORP- ORATE	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	EXTRNL LOAD	OTHR WK USE	BUSI- NESS	OTHER	TOTAL
MANUFACTURER BUILT:														
PISTON TOTAL:														
EST. TOT. HOURS	35,108	4,155	3,553	14,007	0	12,415	224,075	168,783	210,781	19,506	9,346	17,913	5,227	728,589
% STD. ERROR	8.0	19.2	30.6	16.0	0.0	32.6	4.3	5.5	4.8	30.3	21.0	8.8	27.8	2.3
TURBINE: SINGLE ENGINE														
EST. TOT. HOURS	17,529	46,221	56,318	617,075	10,369	154,809	31,718	63,796	405,210	66,752	24,069	29,810	10,888	1,531,427
% STD. ERROR	8.8	7.9	8.9	2.1	18.5	3.9	10.4	7.0	3.2	9.0	11.8	6.8	15.5	1.0
TURBINE: MULTI - ENGINE														
EST. TOT. HOURS	2,242	49,806	43,637	265,047	4,008	101,116	13,698	4,253	9,428	47,437	794	5,390	4,057	543,577
% STD. ERROR	34.5	12.7	13.0	4.6	19.2	5.9	27.4	29.5	27.3	12.5	56.5	17.5	23.0	2.1
TURBINE TOTAL:														
EST. TOT. HOURS	19,771	96,027	99,956	882,122	14,376	255,925	45,416	68,048	414,638	114,189	24,863	35,199	14,945	2,075,004
% STD. ERROR	8.5	7.6	7.8	2.0	14.6	3.2	10.3	6.8	3.2	7.4	11.6	6.3	13.0	0.9
MANUFACTURER BUILT TOTAL:														
EST. TOT. HOURS	54,879	100,182	103,509	896,129	14,378	268,340	269,491	236,831	625,419	133,695	34,209	53,113	20,172	2,803,592
% STD. ERROR	6.1	7.1	7.5	2.0	14.6	3.4	4.0	4.3	2.7	9.0	10.4	5.2	13.1	0.9
AMATEUR BUILT:														
EST. TOT. HOURS	15,083	1,515	0	0	0	0	2,473	0	583	78	0	249	1,462	22,164
% STD. ERROR	7.8	26.0	0.0	0.0	0.0	0.0	35.9	0.0	47.7	68.0	0.0	58.3	21.1	7.7
TOTAL														
EST. TOT. HOURS	69,962	101,697	103,509	896,129	14,378	268,340	271,963	236,831	626,003	133,773	34,209	53,361	21,634	2,825,756
% STD. ERROR	4.6	6.8	7.5	2.0	14.6	3.4	4.0	4.3	2.7	9.0	10.4	5.2	11.4	0.9

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.  
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

9.20 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PAGE 1 OF 6

ACTIVE USE

MANUFACTURER/ MODEL GROUP	EMERG MED SVCE													OTHER WK BUSI-				IN- ACTIVE
	TOTAL ACTIVE	PER- SONAL	UNDER FAR135	NOT UND FAR135	AIR TAXI	COMMUTR CARRIER	CORP- ORATE	INSTRUC TIONAL	AERIAL APPL	EXTNL OBS	LOAD	OTHR USE	NESS	OTHER				
OTHER 1 (*)																		
EST. NO. ACTIVE	93	11	0	0	0	0	0	4	12	0	38	0	0	28	33			
% STD. ERROR	0.0	87.6	0.0	0.0	0.0	0.0	0.0	151.6	85.4	0.0	39.6	0.0	0.0	50.1				
EST. % ACTIVE	73.8																	
OTHER 2 (*)																		
EST. NO. ACTIVE	91	1	0	2	4	0	17	2	8	30	17	3	1	6	22			
% STD. ERROR	0.0	79.4	0.0	66.9	50.6	0.0	21.3	66.5	32.6	14.7	21.0	55.7	79.4	39.6				
EST. % ACTIVE	80.7																	
OTHER 3 (*)																		
EST. NO. ACTIVE	111	0	10	15	27	0	15	1	3	0	23	2	6	9	31			
% STD. ERROR	0.0	0.0	23.2	19.0	13.2	0.0	18.6	66.4	46.7	0.0	14.5	56.5	31.1	25.7				
EST. % ACTIVE	78.4																	
OTHER 4 (*)																		
EST. NO. ACTIVE	572	456	34	0	0	0	0	22	0	9	3	0	4	45	1,218			
% STD. ERROR	0.0	2.3	18.3	0.0	0.0	0.0	0.0	23.2	0.0	36.8	68.0	0.0	58.3	15.8				
EST. % ACTIVE	31.9																	
AERORSJ2																		
EST. NO. ACTIVE	20	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	18			
% STD. ERROR	0.0																	
EST. % ACTIVE	51.7																	
AEROSPAS355																		
EST. NO. ACTIVE	108	0	6	8	68	0	15	6	0	DIS	0	0	DIS	DIS	1			
% STD. ERROR	0.0	0.0	24.8	21.6	4.6	0.0	14.8	25.2	0.0		0.0	0.0						
EST. % ACTIVE	99.0																	
AEROSPAS316																		
EST. NO. ACTIVE	61	0	17	5	15	0	0	0	DIS	0	20	DIS	0	0	30			
% STD. ERROR	0.0	0.0	19.9	40.2	21.1	0.0	0.0	0.0		0.0	17.2		0.0	0.0				
EST. % ACTIVE	67.4																	
AGUSTA205																		
EST. NO. ACTIVE	30	0	0	DIS	7	0	DIS	0	6	0	12	0	0	0	2			
% STD. ERROR	0.0	0.0	0.0		29.9	0.0		0.0	33.3	0.0	19.9	0.0	0.0	0.0				
EST. % ACTIVE	95.0																	
AGUSTAA109																		
EST. NO. ACTIVE	66	7	0	7	DIS	0	29	DIS	0	0	0	0	8	DIS	0			
% STD. ERROR	0.0	35.1	0.0	36.9		0.0	14.0		0.0	0.0	0.0	0.0	33.1					
EST. % ACTIVE	100.0																	



9.20 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PAGE 2 OF 6

ACTIVE USE

MANUFACTURER/ MODEL GROUP	EMERG MED SVCE														OTHER				IN- ACTIVE
	TOTAL ACTIVE	PER- SONAL	UNDER FAR135	NOT UND FAR135	AIR TAXI	COMMUTR CARRIER	CORP- ORATE	INSTRUC TIONAL	AERIAL APPL	EXTNL OBS	LOAD	OTHR USE	WK NESS	BUSI- NESS					
AIRSPC18 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	15 0.0 64.3	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	8				
ARCNEH37 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	0 0.0 0.0	0 0.0 0.0	0 0.0 0.0	0 0.0 0.0	0 0.0 0.0	0 0.0 0.0	0 0.0 0.0	0 0.0 0.0	0 0.0 0.0	0 0.0 0.0	0 0.0 0.0	0 0.0 0.0	0 0.0 0.0	0 0.0 0.0	0				
BELL 204 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	22 0.0 84.3	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	4				
BELL 206 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	1,810 0.0 95.3	42 9.2	53 8.2	65 7.4	695 1.8	16 15.1	314 3.1	44 9.0	74 6.9	376 2.8	10 18.9	18 14.1	86 6.3	17 14.5	90				
BELL 212 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	106 0.0 90.2	0 0.0	0 0.0	DIS	71 7.3	0 0.0	15 25.9	0 0.0	5 47.7	5 47.7	DIS	0 0.0	0 0.0	DIS	11				
BELL 222 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	70 0.0 84.3	DIS	9 16.3	DIS	17 11.3	0 0.0	29 7.5	DIS	DIS	DIS	DIS	0 0.0	DIS	DIS	13				
BELL 412 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	61 0.0 100.0	0 0.0	DIS	14 20.4	28 12.1	0 0.0	14 20.4	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	DIS	0				
BELL 47 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	579 0.0 69.1	62 13.2	6 44.7	8 38.4	34 18.3	0 0.0	12 31.2	34 18.1	217 5.9	143 7.9	9 35.7	8 37.5	33 18.4	12 31.2	259				
BOLKMS105 EST. NO. ACTIVE & STD. ERROR EST. % ACTIVE	171 0.0 97.7	DIS	22 34.7	19 37.8	91 12.4	0 0.0	23 33.6	DIS	DIS	12 47.0	0 0.0	0 0.0	0 0.0	0 0.0	4				

9.20 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PAGE 3 OF 6

ACTIVE USE

MANUFACTURER/ MODEL GROUP	EMERG MED SVCE												IN- ACTIVE		
	TOTAL ACTIVE	PER- SONAL	UNDER FAR135	NOT UND FAR135	AIR TAXI	COMMUTR CARRIER	CORP- ORATE	INSTRUC TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR USE		WK BUSI- NESS	OTHER
BOLKMS117	110	DIS	51	18	13	0	DIS	18	0	DIS	0	0	0	DIS	3
EST. NO. ACTIVE	0.0		19.9	41.8	50.4	0.0		42.5	0.0		0.0	0.0	0.0		
% STD. ERROR	97.2														
EST. % ACTIVE															
ENSTRMF28 (1)	219	61	8	0	DIS	0	0	42	6	32	0	DIS	60	DIS	80
EST. NO. ACTIVE	0.0	10.4	32.5	0.0		0.0	0.0	13.4	37.7	15.8	0.0		10.6		
% STD. ERROR	73.2														
EST. % ACTIVE															
ENSTRMF28 (2)	112	39	8	0	0	0	7	12	0	15	0	0	25	5	10
EST. NO. ACTIVE	0.0	12.8	32.8	0.0	0.0	0.0	36.3	26.4	0.0	23.8	0.0	0.0	17.4	44.5	
% STD. ERROR	91.5														
EST. % ACTIVE															
H23/HTE	12	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	24
EST. NO. ACTIVE	0.0														
% STD. ERROR	32.1														
EST. % ACTIVE															
H34/55	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS
EST. NO. ACTIVE	11.4														
% STD. ERROR															
EST. % ACTIVE															
HILLERFH1100	29	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	35
EST. NO. ACTIVE	0.0														
% STD. ERROR	45.2														
EST. % ACTIVE															
HILLERUH12 (1)	351	82	DIS	0	5	0	DIS	32	146	36	9	21	9	9	207
EST. NO. ACTIVE	0.0	10.2	0.0	0.0	44.7	0.0		17.8	6.7	16.7	34.2	22.5	35.4	35.6	
% STD. ERROR	63.0														
EST. % ACTIVE															
HILLERUH12 (2)	22	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	5
EST. NO. ACTIVE	0.0														
% STD. ERROR	80.2														
EST. % ACTIVE															
HUGHES269	476	62	6	DIS	DIS	0	16	106	31	197	9	8	26	5	200
EST. NO. ACTIVE	0.0	10.0	33.7			0.0	20.7	7.3	14.8	4.6	28.6	29.6	16.1	37.2	
% STD. ERROR	70.4														
EST. % ACTIVE															

9.20 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY  
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ACTIVE USE

MANUFACTURER/ MODEL GROUP	EMERG MED SVCE														IN-			
	TOTAL ACTIVE	PER- SONAL	UNDER FAR135	NOT FAR135	AIR TAXI	COMMUTR CARRIER	CORP- ORATE	INSTRUC TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHER USE	WK NESS	BUSI- OTHER	ACTIVE			
HUGHES369	551	37	9	DIS	66	0	55	24	47	192	29	29	54	DIS	49			
EST. NO. ACTIVE	0.0	13.5	28.4	0.0	9.9	0.0	10.9	17.2	11.9	5.0	15.5	15.5	11.0					
% STD. ERROR	91.8																	
EST. % ACTIVE																		
HYNES B2	53	26	DIS	0	0	0	0	6	DIS	8	0	0	DIS	0	73			
EST. NO. ACTIVE	0.0	14.7	0.0	0.0	0.0	0.0	0.0	39.7		35.3	0.0	0.0		0.0				
% STD. ERROR	41.9																	
EST. % ACTIVE																		
MACDOUG369	61	DIS	0	0	DIS	0	5	0	DIS	37	0	0	6	DIS	0			
EST. NO. ACTIVE	0.0		0.0	0.0	0.0	0.0	23.5	0.0		5.8	0.0	0.0	21.2		6			
% STD. ERROR	100.0														22.0			
EST. % ACTIVE																		
MILITARY204	142	0	0	11	DIS	0	12	20	40	12	11	0	DIS	31	59			
EST. NO. ACTIVE	0.0	0.0	0.0	47.0		0.0	45.6	34.3	22.2	46.2	47.4	0.0		26.0				
% STD. ERROR	70.8																	
EST. % ACTIVE																		
MILITARY47 (1)	219	33	DIS	0	0	0	DIS	48	85	35	0	0	9	0	156			
EST. NO. ACTIVE	0.0	14.2	0.0	0.0	0.0	0.0		11.3	7.6	13.9	0.0	0.0	28.9	0.0				
% STD. ERROR	58.5																	
EST. % ACTIVE																		
MILITARY47 (2)	15	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	5			
EST. NO. ACTIVE	0.0																	
% STD. ERROR	76.9																	
EST. % ACTIVE																		
MODFD47	37	5	0	0	0	0	0	11	14	8	0	0	0	0	16			
EST. NO. ACTIVE	0.0	56.3	0.0	0.0	0.0	0.0	0.0	31.7	27.7	40.3	0.0	0.0	0.0	0.0				
% STD. ERROR	70.4																	
EST. % ACTIVE																		
ORIH19	44	20	0	0	0	0	0	0	24	0	0	0	0	0	29			
EST. NO. ACTIVE	0.0	64.1	0.0	0.0	0.0	0.0	0.0	0.0	53.4	0.0	0.0	0.0	0.0	0.0				
% STD. ERROR	60.3																	
EST. % ACTIVE																		
ORIH158	11	0	0	0	0	0	0	0	11	0	0	0	0	0	22			
EST. NO. ACTIVE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
% STD. ERROR	33.3																	
EST. % ACTIVE																		

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ACTIVE USE

MANUFACTURER/ MODEL GROUP	TOTAL ACTIVE	EMERG MED SVCE										IN-			
		PER- SONAL	UNDER FAR135	NOT UND FAR135	AIR TAXI	COMMUTR CARRIER	CORP- ORATE	INSTRUC TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR USE	WK NESS	OTHER	ACTIVE
ROBSINR22	395	73	DIS	0	DIS	0	7	225	6	33	0	6	38	DIS	13
EST. NO. ACTIVE	0.0	7.9		0.0			29.1	3.3	31.1	12.5	0.0	31.2	11.6		
% STD. ERROR	96.9														
EST. % ACTIVE															
SCHWZH269	48	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	6
EST. NO. ACTIVE	0.0														
% STD. ERROR	89.6														
EST. % ACTIVE															
SKRSKYS55	7	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	27
EST. NO. ACTIVE	0.0														
% STD. ERROR	20.0														
EST. % ACTIVE															
SKRSKYS58	35	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	37
EST. NO. ACTIVE	0.0														
% STD. ERROR	48.6														
EST. % ACTIVE															
SKRSKYS58T	27	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	11
EST. NO. ACTIVE	0.0														
% STD. ERROR	71.4														
EST. % ACTIVE															
SKRSKYS61	14	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	14
EST. NO. ACTIVE	0.0														
% STD. ERROR	49.6														
EST. % ACTIVE															
SKRSKYS76	167	DIS	9	8	55	DIS	82	0	0	0	0	0	5	5	8
EST. NO. ACTIVE	0.0		19.2	21.4	6.6		4.7	0.0	0.0	0.0	0.0	0.0	26.9	26.7	
% STD. ERROR	95.6														
EST. % ACTIVE															
SNIAS 350	255	DIS	13	11	120	0	40	6	DIS	35	6	DIS	12	DIS	16
EST. NO. ACTIVE	0.0		19.6	21.1	4.8	0.0	10.6	28.2		11.3	28.1		20.1		
% STD. ERROR	94.0														
EST. % ACTIVE															
SNIAS SA318	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EST. NO. ACTIVE	0.0														
% STD. ERROR	0.0														
EST. % ACTIVE	0.0														

9.20 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY  
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MANUFACTURER/ MODEL GROUP	ACTIVE USE														IN- ACTIVE
	TOTAL ACTIVE	PER- SONAL	EMERG MED SVCE UNDER NOT UND FAR135 FAR135	AIR TAXI	COMMUTR CARRIER	CORP- ORATE	INSTRUC TIONAL	AERIAL APPL	EXTNL OBS	OTHER LOAD	WK USE	BUSI- NESS	OTHER		
SNIAS SA341	20	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	9	
EST. NO. ACTIVE	0.0														
% STD. ERROR	68.7														
EST. % ACTIVE															
TH55	42	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	18	
EST. NO. ACTIVE	0.0														
% STD. ERROR	70.1														
EST. % ACTIVE															
TOMCAT	24	0	0	0	0	0	0	24	0	0	0	0	0	14	
EST. NO. ACTIVE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
% STD. ERROR	63.8														
EST. % ACTIVE															
TOTAL	7,488	1,072	285	216	1,342	21	727	695	833	1,298	263	104	416	2,915	
EST. NO. ACTIVE	0.6	2.6	6.1	7.1	1.8	12.3	2.7	3.2	3.4	2.0	7.5	8.4	4.0	216	
% STD. ERROR	72.0													9.3	
EST. % ACTIVE															

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.  
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

(\*) THE "OTHER" CATEGORIES REPRESENT:

- OTHER 1 - MANUFACTURER BUILT - PISTON
- OTHER 2 - MANUFACTURER BUILT - TURBINE-SINGLE ENGINE
- OTHER 3 - MANUFACTURER BUILT - TURBINE-MULTI ENGINE
- OTHER 4 - AMATEUR BUILT

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

(1) INDICATES MANUFACTURER BUILT - PISTON

(2) INDICATES MANUFACTURER BUILT - TURBINE-SINGLE ENGINE

9.21 1989 ROTORCRAFT TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

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PRIMARY USE

MANUFACTURER/ MODEL GROUP	EMERG MED SVCE												TOTAL	
	PER- SONAL	UNDER FAR	135	NOT UND 135	AIR TAXI	COMMUTER CARRIER	CORP- ORATE	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHER WK USE		BUSI- NESS
OTHER 1 (*) EST. TOT. HOURS % STD. ERROR	268 94.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	4 151.6	3,744 87.1	0 0.0	4,230 102.1	0 0.0	1,655 53.3	9,901 47.5	
	88 79.4	0 0.0	62 66.9	1,527 50.9	0 0.0	5,959 24.4	613 66.5	1,884 35.4	15,421 18.5	9,822 29.8	59 55.7	1,062 46.5	36,571 8.8	
OTHER 3 (*) EST. TOT. HOURS % STD. ERROR	0 0.0	4,284 24.9	5,772 23.1	17,082 14.4	0 0.0	5,127 20.6	46 66.4	1,243 46.7	0 0.0	37,317 16.3	794 56.5	1,435 33.7	67,573 8.2	
	15,083 7.8	1,515 26.0	0 0.0	0 0.0	0 0.0	2,473 35.9	0 0.0	583 47.7	0 0.0	78 68.0	0 0.0	249 58.3	22,164 6.8	
AERORSJ2 EST. TOT. HOURS % STD. ERROR	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	576 16.9	
AEROSIAS355 EST. TOT. HOURS % STD. ERROR	0 0.0	2,022 27.5	3,961 22.2	43,334 5.0	0 0.0	6,629 23.1	1,698 32.1	0 0.0	DIS	0 0.0	0 0.0	DIS	58,663 3.0	
	0 0.0	10,054 21.0	2,090 40.2	4,383 33.9	0 0.0	0 0.0	0 0.0	DIS	0 0.0	8,580 23.5	DIS	0 0.0	27,516 7.7	
AEROSPSA316 EST. TOT. HOURS % STD. ERROR	0 0.0	0 0.0	DIS	2,703 32.1	0 0.0	DIS	0 0.0	1,458 35.3	0 0.0	4,878 27.5	0 0.0	0 0.0	11,553 10.4	
	511 44.4	0 0.0	2,347 36.9	DIS	0 0.0	9,742 16.5	DIS	0 0.0	0 0.0	0 0.0	0 0.0	1,036 36.9	15,372 8.7	

9.21 1989 ROTORCRAFT TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY  
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MANUFACTURER/ MODEL GROUP	PRIMARY USE														TOTAL		
	EMERG MED SVCE				CORP- INSTRU- ORATE TIONAL				AERIAL OBS		EXTNL LOAD		OTHR WK USE			BUSI- NESS	OTHER
PER- SONAL	FAR 135	NOT UND FAR 135	AIR TAXI	COMMUTER CARRIER	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS		
AIRSPC18 EST. TOT. HOURS & STD. ERROR	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	939 37.1
ARCNEH37 EST. TOT. HOURS & STD. ERROR	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
BELL 204 EST. TOT. HOURS & STD. ERROR	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	5,621 6.6
BELL 206 EST. TOT. HOURS & STD. ERROR	7,253 11.1	23,295 9.5	39,112 8.1	494,558 2.2	10,369 18.5	118,926 4.0	18,484 11.0	30,874 7.8	207,561 3.5	4,781 19.4	7,819 15.8	14,245 8.5	1,337 27.0	980,885 1.0			
BELL 212 EST. TOT. HOURS & STD. ERROR	0 0.0	0 0.0	DIS	38,458 9.4	0 0.0	11,236 27.6	0 0.0	1,987 47.9	1,748 47.9	DIS	DIS	0 0.0	DIS	56,155 5.4	DIS		
BELL 222 EST. TOT. HOURS & STD. ERROR	DIS	4,386 17.6	DIS	8,729 11.9	0 0.0	8,486 9.8	DIS	DIS	DIS	DIS	DIS	DIS	DIS	26,601 3.6	DIS		
BELL 412 EST. TOT. HOURS & STD. ERROR	0 0.0	DIS	6,652 21.4	26,995 12.5	0 0.0	5,743 30.2	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	DIS	41,651 5.8	DIS		
BELL 47 EST. TOT. HOURS & STD. ERROR	8,450 24.2	92 46.6	2,566 39.2	9,094 20.8	0 0.0	6,675 63.5	9,413 23.0	66,721 8.8	41,865 10.7	2,317 40.0	2,925 53.7	3,547 27.5	1,895 38.8	154,204 4.9			
BOLKMS105 EST. TOT. HOURS & STD. ERROR	DIS	8,246 35.4	8,867 38.7	73,714 13.2	0 0.0	12,169 34.9	DIS	DIS	3,276 47.7	0 0.0	0 0.0	0 0.0	0 0.0	107,249 5.9	0 0.0		

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PRIMARY USE

MANUFACTURER/ MODEL GROUP	EMERG MED SVCE												TOTAL	
	PER- SONAL	UNDER FAR 135	NOT UND FAR 135	AIR TAXI	COMMUTER CARRIER	CORP- ORATE	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI- NESS		OTHER
BOLRMS117 EST. TOT. HOURS & STD. ERROR	DIS 21.8	21,471 42.7	10,220 0.0	8,395 51.1	0 0.0	DIS 10,796 44.6	0 0.0	DIS	0 0.0	0 0.0	0 0.0	0 0.0	DIS 53,916 7.2	
ENSTRMF28 (1) EST. TOT. HOURS & STD. ERROR	4,118 13.9	582 39.9	0 0.0	DIS	0 0.0	0 0.0	8,215 19.2	4,951 41.8	17,936 25.7	0 0.0	DIS	3,306 14.0	DIS 39,802 12.4	
ENSTRMF28 (2) EST. TOT. HOURS & STD. ERROR	3,222 17.7	1,995 34.1	0 0.0	0 0.0	0 0.0	613 41.5	2,545 36.7	0 0.0	10,906 32.0	0 0.0	0 0.0	2,413 20.8	709 44.5	20,406 16.5
H23/HTE EST. TOT. HOURS & STD. ERROR	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	2,302 42.8
H34/55 EST. TOT. HOURS & STD. ERROR	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS
HILLERFH1100 EST. TOT. HOURS & STD. ERROR	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	3,871 26.3
HILLERUH12 (1) EST. TOT. HOURS & STD. ERROR	4,525 17.6	DIS	0 0.0	1,748 45.4	0 0.0	DIS	3,073 26.2	40,639 7.7	7,748 22.2	7,761 35.2	3,945 30.7	815 41.8	87 66.7	71,710 5.4
HILLERUH12 (2) EST. TOT. HOURS & STD. ERROR	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	6,559 19.6
HUGHES269 EST. TOT. HOURS & STD. ERROR	3,719 13.4	767 43.2	DIS	DIS	0 0.0	1,858 24.0	45,695 10.0	7,116 17.0	93,379 6.9	2,382 34.3	1,560 40.1	3,207 19.9	20 1154.2	162,945 4.2



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MANUFACTURER/ MODEL GROUP	PRIMARY USE												TOTAL
	PER- SONAL	EMERG UNDER FAR 135	MED SVCE NOT UND FAR 135	AIR TAXI	COMPUTER CARRIER	CORP- ORATE	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI- NESS	
HUGHES369													
EST. TOT. HOURS	3,653	3,535	DIS	37,869	0	11,831	8,562	15,039	120,194	21,154	13,065	7,408	245,743
% STD. ERROR	17.9	38.8		11.1	0.0	13.5	18.9	13.7	7.2	17.3	18.2	14.7	3.3
HYNES B2													
EST. TOT. HOURS	1,881	DIS	0	0	0	0	698	DIS	569	0	0	DIS	3,577
% STD. ERROR	19.8		0.0	0.0	0.0	0.0	54.8		40.4	0.0	0.0		11.6
MACDOUG369													
EST. TOT. HOURS	DIS	0	0	DIS	0	910	0	DIS	27,485	0	0	1,762	29,482
% STD. ERROR		0.0	0.0		0.0	25.5	0.0		7.2	0.0	0.0	21.7	6.5
MILITARY204													
EST. TOT. HOURS	0	0	1,675	DIS	0	1,227	614	6,225	969	2,117	0	DIS	17,028
% STD. ERROR	0.0	0.0	50.7		0.0	47.6	35.6	23.9	50.0	50.2	0.0		10.3
MILITARY47 (1)													
EST. TOT. HOURS	1,613	DIS	0	0	0	DIS	9,273	21,721	7,709	0	0	1,488	43,459
% STD. ERROR	18.2		0.0	0.0	0.0		17.0	12.8	22.8	0.0	0.0	37.3	7.4
MILITARY47 (2)													
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	2,685
% STD. ERROR													19.2
MODFD47													
EST. TOT. HOURS	316	0	0	0	0	0	1,664	3,816	2,292	0	0	0	14,105
% STD. ERROR	56.3	0.0	0.0	0.0	0.0	0.0	46.4	31.5	55.4	0.0	0.0	0.0	17.0
ORLHELH19													
EST. TOT. HOURS	501	0	0	0	0	0	0	6,513	0	0	0	0	7,014
% STD. ERROR	64.1	0.0	0.0	0.0	0.0	0.0	0.0	56.7	0.0	0.0	0.0	0.0	48.7
ORLHELH58													
EST. TOT. HOURS	0	0	0	0	0	0	0	220	0	0	0	0	220
% STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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PRIMARY USE

MANUFACTURER/ MODEL GROUP	PER- SONAL	EMERG MED SVCE		AIR TAXI	COMPUTER CARRIER	CORP- ORATE	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI- NESS	OTHER	TOTAL
		UNDER FAR 135	NOT UND FAR 135											
ROBSINR22 EST. TOT. HOURS & STD. ERROR	8,679 11.5	DIS	0 0.0	DIS	0 0.0	1,338 31.1	139,913 4.5	3,488 36.8	14,799 13.7	0 0.0	604 38.2	4,991 14.6	DIS	175,735 3.2
SCHWZH269 EST. TOT. HOURS & STD. ERROR	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	27,146 4.8
SKRSKYS55 EST. TOT. HOURS & STD. ERROR	0	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	323 20.5
SKRSKYS58 EST. TOT. HOURS & STD. ERROR	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	4,073 10.8
SKRSKYS58T EST. TOT. HOURS & STD. ERROR	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	12,170 15.9
SKRSKYS61 EST. TOT. HOURS & STD. ERROR	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	12,133 7.1
SKRSKYS76 EST. TOT. HOURS & STD. ERROR	DIS	7,150 19.2	3,926 22.7	47,306 7.5	DIS	41,354 5.9	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	2,018 27.7	333 40.1	104,265 2.6
SNIAS 350 EST. TOT. HOURS & STD. ERROR	DIS	5,971 20.2	5,794 23.6	73,886 5.8	0 0.0	12,502 12.7	885 46.1	DIS	17,465 12.8	4,483 35.8	DIS	2,745 21.3	DIS	128,380 2.8
SNIAS SA318 EST. TOT. HOURS & STD. ERROR	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0

9.21 1989 ROTORCRAFT TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

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MANUFACTURER/ MODEL GROUP	PRIMARY USE													TOTAL
	PER- SONAL	EMERG UNDER FAR	MED NOT UND FAR	AIR TAXI	COMPUTER CARRIER	CORP- ORATE	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI- NESS	OTHER	
SNIAS SA341	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	2,958 20.8
EST. TOT. HOURS														
% STD. ERROR														
TH55	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	5,021 7.0
EST. TOT. HOURS														
% STD. ERROR														
TOMCAT	0	0	0	0	0	0	0	4,830	0	0	0	0	0	4,830
EST. TOT. HOURS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.8	0.0	0.0	0.0	0.0	0.0	9.8
% STD. ERROR														
TOTAL	69,962	101,697	103,509	896,128	14,378	268,340	271,963	236,831	626,002	133,773	34,209	53,361	21,634	2,825,757
EST. TOT. HOURS	4.6	6.8	7.5	2.0	14.6	3.4	4.0	4.3	2.7	9.0	10.4	5.2	11.4	0.9
% STD. ERROR														

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.  
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

(\*) THE "OTHER" CATEGORIES REPRESENT:  
OTHER 1 - MANUFACTURER BUILT - PISTON  
OTHER 2 - MANUFACTURER BUILT - TURBINE-SINGLE ENGINE  
OTHER 3 - MANUFACTURER BUILT - TURBINE-MULTI ENGINE  
OTHER 4 - AMATEUR BUILT

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

(1) INDICATES MANUFACTURER BUILT - PISTON  
(2) INDICATES MANUFACTURER BUILT - TURBINE-SINGLE ENGINE

9.22 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY  
BY REGION OF BASED ROTORCRAFT

PAGE 1 OF 2

ACTIVE USE

REGION	TOTAL ACTIVE	PER- SONAL	EMERG UNDER FAR135	MED NOT UND	SVCE FAR135	AIR TAXI	COMMUTR CARRIER	CORP- ORATE	INSTRUC TIONAL	AERIAL APPL	OBS LOAD	EXTNL USE	OTHR WK NESS	OTHER	IN- ACTIVE
ALASKAN															
EST. NO. ACTIVE	248	21	DIS	DIS	DIS	164	0	11	5	0	12	13	DIS	16	40
% STD. ERROR	5.3	22.2				6.3	0.0	21.5	47.5	0.0	25.6	31.4		26.1	0.0
EST. % ACTIVE	86.1														
CENTRAL															
EST. NO. ACTIVE	216	44	DIS	DIS	DIS	DIS	DIS	11	20	23	58	13	0	8	120
% STD. ERROR	6.4	16.0						24.3	19.2	30.6	12.0	27.0	0.0	27.0	
EST. % ACTIVE	64.3														
EASTERN															
EST. NO. ACTIVE	1,004	137	60	44	97	DIS	DIS	179	121	73	154	DIS	12	84	325
% STD. ERROR	2.8	9.2	18.9	15.4	9.4			5.6	8.8	16.7	6.3		27.4	9.5	
EST. % ACTIVE	75.5													18.2	
GREAT LAKES															
EST. NO. ACTIVE	752	153	50	13	28	DIS	DIS	64	85	122	161	15	DIS	60	456
% STD. ERROR	3.4	8.0	17.1	17.1	16.4			8.9	13.0	9.1	7.0	71.0		10.8	
EST. % ACTIVE	62.2													32.0	
NEW ENGLAND															
EST. NO. ACTIVE	292	70	10	DIS	DIS	DIS	DIS	53	50	15	30	DIS	DIS	26	85
% STD. ERROR	4.8	11.6	45.3					9.2	11.3	33.9	16.0			16.7	
EST. % ACTIVE	77.5													0.0	
NORTHWEST MT.															
EST. NO. ACTIVE	882	93	47	DIS	DIS	DIS	DIS	92	57	153	87	100	35	49	380
% STD. ERROR	3.1	13.5	13.6					9.9	11.8	8.0	9.8	11.2	16.1	12.7	
EST. % ACTIVE	69.9													20.4	
SOUTHERN															
EST. NO. ACTIVE	1,223	198	55	34	76	DIS	DIS	101	80	194	311	51	DIS	60	535
% STD. ERROR	2.6	9.4	14.6	17.4	8.1			7.2	9.6	9.5	4.6	32.5		10.3	
EST. % ACTIVE	69.6													23.6	
SOUTHWESTERN															
EST. NO. ACTIVE	1,413	158	23	28	694	DIS	DIS	123	66	62	153	22	DIS	39	454
% STD. ERROR	2.1	9.3	22.4	25.0	2.7			7.7	11.3	11.7	6.9	29.6		14.8	
EST. % ACTIVE	75.7													21.3	

9.22 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY  
BY REGION OF BASED ROTORCRAFT

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REGION	ACTIVE USE														IN- ACTIVE
	TOTAL ACTIVE	PER- SONAL	EMERG FAR135	MED FAR135	SVCE NOT UND	AIR TAXI	COMMUTR CARRIER	CORP- ORATE	INSTRUC TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR USE	WK BUSI- NESS	
WESTERN-PACIFIC															
EST. NO. ACTIVE	1,458	197	37	63	209	DIS	88	210	209	304	44	28	63	DIS	521
% STD. ERROR	2.1	7.2	15.0	14.2	5.2		8.2	5.5	8.2	4.6	10.0	16.8	10.6		
EST. % ACTIVE	73.7														
TOTAL															
EST. NO. ACTIVE	7,488	1,072	285	216	1,342	21	727	695	833	1,298	263	104	416	216	2,915
% STD. ERROR	0.6	2.6	6.1	7.1	1.8	12.3	2.7	3.2	3.4	2.0	7.5	8.4	4.0	9.3	
EST. % ACTIVE	72.0														

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.  
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.  
"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

9.23 1989 ROTORCRAFT TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY  
BY REGION OF BASED ROTORCRAFT

PAGE 1 OF 1

PRIMARY USE

REGION	PER- SONAL	EMERG UNDER FAR	MED 135	SVCE NOT UND 135	AIR TAXI	COMMUTER CARRIER	CORP- ORATE	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI- NESS	OTHER	TOTAL
ALASKAN EST. TOT. HOURS	360	DIS	DIS	DIS	80,198	0	5,781	100	0	4,937	6,546	DIS	2,573	0	101,564
% STD. ERROR	22.6				6.7	0.0	23.7	47.5	0.0	27.0	33.2		28.0	0.0	6.0
CENTRAL EST. TOT. HOURS	2,395	DIS	DIS	8,291	DIS	DIS	1,824	5,835	3,912	22,466	1,984	0	588	DIS	66,146
% STD. ERROR	17.4			20.6			25.7	22.5	32.9	14.9	29.5	0.0	27.2		8.2
EASTERN EST. TOT. HOURS	9,249	18,085	20,088	20,088	40,930	DIS	53,055	35,998	18,353	68,201	DIS	2,023	11,365	4,125	279,010
% STD. ERROR	11.3	21.5	16.7	16.7	9.7		6.2	9.9	16.8	7.3		27.8	11.0	20.9	3.5
GREAT LAKES EST. TOT. HOURS	6,332	15,710	7,230	11,350	DIS	DIS	15,844	29,053	26,144	61,161	3,353	DIS	7,558	1,219	186,105
% STD. ERROR	11.9	18.4	16.7	17.0			9.6	14.0	10.2	8.4	72.1		12.3	32.1	4.3
NEW ENGLAND EST. TOT. HOURS	5,712	2,432	DIS	DIS	DIS	DIS	24,495	24,461	2,951	11,789	DIS	DIS	3,143	0	87,844
% STD. ERROR	14.0	49.4					9.9	12.3	33.3	17.5			18.8	0.0	5.8
NORTHWEST MT. EST. TOT. HOURS	5,779	17,354	DIS	DIS	23,277	DIS	30,013	19,510	43,775	37,153	71,336	11,053	4,621	1,975	277,378
% STD. ERROR	16.4	13.6			11.9		16.1	14.2	8.9	11.1	11.8	19.1	18.6	24.3	4.4
SOUTHERN EST. TOT. HOURS	12,412	20,600	15,864	33,111	DIS	DIS	24,520	30,924	48,608	136,260	4,197	DIS	8,360	1,774	348,689
% STD. ERROR	11.1	16.1	17.5	8.9			7.9	11.4	11.2	5.4	47.0		12.5	26.9	3.5
SOUTHWESTERN EST. TOT. HOURS	10,900	9,832	16,717	568,436	DIS	DIS	74,532	16,283	19,730	53,125	7,855	DIS	5,640	3,650	784,207
% STD. ERROR	11.4	23.5	25.5	2.8			8.3	13.4	12.4	8.5	33.8		16.9	24.9	2.4
WESTERN-PACIFIC EST. TOT. HOURS	14,759	14,499	25,968	142,358	DIS	DIS	26,780	114,666	70,368	219,330	22,469	12,253	7,939	DIS	661,746
% STD. ERROR	15.4	17.0	14.7	5.8			9.7	6.7	9.4	5.8	12.1	19.6	12.4		2.9
TOTAL EST. TOT. HOURS	69,962	101,697	103,509	896,129	14,378	268,340	271,963	236,831	626,003	133,773	34,209	53,361	21,634	2,825,756	
% STD. ERROR	4.6	6.8	7.5	2.0	14.6	3.4	4.0	4.0	4.3	2.7	9.0	10.4	5.2	11.4	0.9

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.  
RCW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

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9.24 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY  
BY STATE OF BASED ROTORCRAFT

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ACTIVE USE

STATE	TOTAL ACTIVE	PER- SONAL	EMERG MED SVCE UNDER NOT UND FAR135 FAR135	AIR TAXI	COMMUTR CORP- CARRIER ORATE	INSTRUC TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSS- NESS	OTHER	IN- ACTIVE
ALABAMA													
EST. NO. ACTIVE	96	6	8	DIS	0	12	6	19	16	10	0	5	69
% STD. ERROR	10.6	47.6	23.8		0.0	23.6	32.2	34.4	17.2	30.3	0.0	0.0	
EST. % ACTIVE	58.0												
ALASKA													
EST. NO. ACTIVE	248	21	DIS	DIS	0	11	5	0	12	13	DIS	16	40
% STD. ERROR	5.3	22.2			0.0	21.5	47.5	0.0	25.6	31.4		26.1	
EST. % ACTIVE	86.1											0.0	
ARIZONA													
EST. NO. ACTIVE	176	37	0	DIS	0	11	24	8	42	DIS	9	8	120
% STD. ERROR	7.6	17.5	0.0		0.0	26.9	18.1	97.2	12.5		29.7	28.1	
EST. % ACTIVE	59.3											13	
ARKANSAS													
EST. NO. ACTIVE	37	18	DIS	DIS	0	0	DIS	6	10	0	0	0	28
% STD. ERROR	14.9	25.4			0.0	0.0		38.3	30.4	0.0	0.0	0.0	
EST. % ACTIVE	57.5											0.0	
CALIFORNIA													
EST. NO. ACTIVE	1,072	131	30	43	0	76	182	195	208	41	16	48	352
% STD. ERROR	2.5	8.9	15.4	18.5	0.0	8.6	5.9	7.8	5.3	9.7	22.5	12.2	
EST. % ACTIVE	75.3											47.3	
COLORADO													
EST. NO. ACTIVE	101	12	9	6	DIS	5	5	14	18	12	0	9	47
% STD. ERROR	10.2	55.0	27.6	30.8		27.0	44.9	27.0	20.9	27.8	0.0	25.4	
EST. % ACTIVE	68.4											42.2	
CONNECTICUT													
EST. NO. ACTIVE	66	13	8	DIS	0	19	14	0	0	0	0	DIS	12
% STD. ERROR	10.3	29.8	45.0		0.0	14.1	20.0	0.0	0.0	0.0	0.0	0.0	
EST. % ACTIVE	85.0											0.0	
DELAWARE													
EST. NO. ACTIVE	33	DIS	0	DIS	0	10	DIS	DIS	5	0	0	10	6
% STD. ERROR	17.8		0.0		0.0	22.8			33.3	0.0	0.0	28.0	
EST. % ACTIVE	85.8											0.0	
DIST. OF COLUMBIA													
EST. NO. ACTIVE	32	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	0
% STD. ERROR													
EST. % ACTIVE	100.0												

9.24 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY  
BY STATE OF BASED ROTORCRAFT

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ACTIVE USE

STATE	TOTAL ACTIVE	PER- SONAL	EMERG MED SVCE				AIR TAXI	COMMUTR CARRIER	CORP- ORATE	INSTRUC TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI- NESS	OTHER	IN- ACTIVE
			UNDER FAR135	NOT UND FAR135	UND FAR135	UND FAR135											
FLORIDA																	
EST. NO. ACTIVE	635	121	22	12	49	DIS	35	47	130	127	39	9	32	DIS	239		
% STD. ERROR	4.3	13.6	31.1	21.1	10.7		12.4	12.8	12.7	7.9	41.4	21.9	14.8				
EST. % ACTIVE	72.6																
GEORGIA																	
EST. NO. ACTIVE	127	21	0	DIS	9	0	DIS	7	10	57	0	0	5	0	65		
% STD. ERROR	7.3	23.3	0.0		21.3	0.0		31.7	36.0	8.5	0.0	0.0	28.8	0.0			
EST. % ACTIVE	66.2																
HAWAII																	
EST. NO. ACTIVE	126	8	DIS	DIS	68	DIS	DIS	DIS	6	25	0	DIS	DIS	0	24		
% STD. ERROR	6.5	31.4			8.4				42.5	15.9	0.0			0.0			
EST. % ACTIVE	83.7																
IDAHO																	
EST. NO. ACTIVE	86	17	0	DIS	10	0	18	DIS	17	DIS	6	0	7	DIS	22		
% STD. ERROR	9.3	24.7	0.0		24.3	0.0	21.2		21.7		42.2	0.0	33.6				
EST. % ACTIVE	80.0																
ILLINOIS																	
EST. NO. ACTIVE	137	19	16	6	DIS	0	13	8	22	15	12	DIS	15	0	95		
% STD. ERROR	10.4	23.9	33.9	25.3		0.0	20.4	34.7	21.2	26.2	87.2	DIS	20.9	0.0			
EST. % ACTIVE	58.9																
INDIANA																	
EST. NO. ACTIVE	124	34	9	0	DIS	DIS	11	9	20	35	0	DIS	6	DIS	58		
% STD. ERROR	7.9	17.7	37.4	0.0			18.0	36.2	22.5	14.3	0.0		31.6				
EST. % ACTIVE	68.3																
IOWA																	
EST. NO. ACTIVE	46	8	5	DIS	0	0	DIS	10	10	DIS	DIS	0	0	DIS	46		
% STD. ERROR	16.7	40.0	40.7		0.0	0.0		27.2	58.1			0.0	0.0				
EST. % ACTIVE	50.2																
KANSAS																	
EST. NO. ACTIVE	45	9	DIS	DIS	0	0	0	DIS	6	15	0	0	5	DIS	28		
% STD. ERROR	13.5	34.1			0.0	0.0	0.0		49.5	25.0	0.0	0.0	34.0				
EST. % ACTIVE	61.2																
KENTUCKY																	
EST. NO. ACTIVE	68	9	DIS	DIS	DIS	0	24	DIS	0	16	0	DIS	8	0	18		
% STD. ERROR	8.8	35.7				0.0	14.9		0.0	20.7	0.0		27.1	0.0			
EST. % ACTIVE	79.4																



9.24 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY  
BY STATE OF BASED ROTORCRAFT

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ACTIVE USE

STATE	TOTAL ACTIVE	EMERG MED SVCE				AIR TAXI	COMMUTR CARRIER	CORP- ORATE	INSTRUC TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR USE	WK BUSI- NESS	OTHER	IN- ACTIVE
		PER- SONAL	UNDER FAR135	NOT UND FAR135	UND FAR135											
LOUISIANA																
EST. NO. ACTIVE	645	19	6	8	497	DIS	81	DIS	22	9	8	0	8	DIS		59
% STD. ERROR	3.0	24.3	47.4	57.6	3.4		10.2		19.2	30.6	69.5	0.0	35.0			
EST. % ACTIVE	91.6															
MAINE																
EST. NO. ACTIVE	27	11	0	0	DIS	0	0	DIS	8	6	0	0	DIS	0		15
% STD. ERROR	20.1	32.2	0.0	0.0		0.0	0.0		55.3	37.6	0.0	0.0		0.0		
EST. % ACTIVE	63.9															
MARYLAND																
EST. NO. ACTIVE	101	18	0	25	DIS	0	11	15	0	25	0	0	8	DIS		10
% STD. ERROR	7.6	23.0	0.0	15.6		0.0	21.5	21.8	0.0	14.8	0.0	0.0	26.3			
EST. % ACTIVE	90.7															
MASSACHUSETTS																
EST. NO. ACTIVE	107	13	DIS	0	6	DIS	23	25	8	17	9	DIS	DIS	0		38
% STD. ERROR	8.1	22.7		0.0	25.1	15.0	15.0	16.3	39.6	22.2	38.5			0.0		
EST. % ACTIVE	73.6															
MICHIGAN																
EST. NO. ACTIVE	151	42	DIS	DIS	16	0	12	25	9	32	DIS	0	11	DIS		64
% STD. ERROR	7.2	16.1			18.7	0.0	26.0	18.2	37.2	16.7		0.0	24.1			
EST. % ACTIVE	70.1															
MINNESOTA																
EST. NO. ACTIVE	73	5	DIS	DIS	0	0	DIS	5	41	18	0	DIS	DIS	0		68
% STD. ERROR	10.6	46.3			0.0	0.0		39.9	16.4	17.3	0.0			0.0		
EST. % ACTIVE	52.0															
MISSISSIPPI																
EST. NO. ACTIVE	51	9	DIS	DIS	0	0	DIS	DIS	12	22	0	0	DIS	DIS		11
% STD. ERROR	12.8	35.9			0.0	0.0			29.9	19.3	0.0					
EST. % ACTIVE	82.7															
MISSOURI																
EST. NO. ACTIVE	114	19	6	7	5	DIS	10	9	5	39	10	0	DIS	0		37
% STD. ERROR	8.5	24.4	38.4	25.7	27.5	25.5	25.5	29.5	45.1	14.3	32.0	0.0		0.0		
EST. % ACTIVE	75.3															
MONTANA																
EST. NO. ACTIVE	69	5	7	0	9	DIS	14	DIS	6	9	6	0	6	0		28
% STD. ERROR	15.8	45.4	33.8	0.0	33.8	36.8	36.8		41.3	30.4	108.7	0.0	30.1	0.0		
EST. % ACTIVE	70.8															

9.24 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY  
BY STATE OF BASED ROTORCRAFT

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STATE	ACTIVE USE														IN- ACTIVE
	TOTAL ACTIVE	PER- SONAL	EMERG UND	UNDER FAR135	NOT UND	AIR TAXI	COMMUTR CARRIER	CORP- ORATE	INSTRUC TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHER WK USE	DIS NESS	
NEBRASKA															
EST. NO. ACTIVE	11	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	8
% STD. ERROR	29.9														
EST. % ACTIVE	57.2														
NEVADA															
EST. NO. ACTIVE	85	20	DIS	12	19	0	0	0	DIS	0	29	0	0	5	24
% STD. ERROR	10.9	23.3		28.0	17.1	0.0	0.0	0.0		0.0	21.6	0.0	0.0	42.7	
EST. % ACTIVE	78.1														
NEW HAMPSHIRE															
EST. NO. ACTIVE	67	25	0	0	0	0	7	DIS	DIS	0	6	DIS	0	15	10
% STD. ERROR	9.4	17.5	0.0	0.0	0.0	0.0	26.5		0.0	0.0	33.6		0.0	22.8	
EST. % ACTIVE	87.4												0.0	0.0	
NEW JERSEY															
EST. NO. ACTIVE	202	18	DIS	7	37	DIS	65	DIS	20	17	18	0	0	7	37
% STD. ERROR	6.5	37.7		22.5	11.2	10.1	10.1		17.7	32.7	21.1	0.0	0.0	31.1	
EST. % ACTIVE	84.7													39.7	
NEW MEXICO															
EST. NO. ACTIVE	40	12	DIS	0	5	0	DIS	DIS	DIS	DIS	DIS	0	0	7	24
% STD. ERROR	25.1	68.0		0.0	31.3	0.0						0.0	0.0	42.1	
EST. % ACTIVE	62.3													0.0	
NEW YORK															
EST. NO. ACTIVE	239	41	8	DIS	16	0	22	DIS	34	11	46	DIS	5	25	94
% STD. ERROR	5.7	15.6	29.7		20.5	0.0	15.2		13.9	28.6	11.7		40.8	19.6	
EST. % ACTIVE	71.8													31.2	
NORTH CAROLINA															
EST. NO. ACTIVE	88	21	DIS	7	7	0	7	DIS	DIS	8	20	0	DIS	8	47
% STD. ERROR	9.5	25.1		25.5	23.5	0.0	29.9			39.7	20.1	0.0		31.8	
EST. % ACTIVE	65.2													0.0	
NORTH DAKOTA															
EST. NO. ACTIVE	23	7	0	0	DIS	0	0	DIS	6	9	DIS	0	0	0	5
% STD. ERROR	19.4	39.8	0.0	0.0		0.0	0.0		29.3	36.1		0.0	0.0	0.0	
EST. % ACTIVE	81.5														
OHIO															
EST. NO. ACTIVE	190	36	17	DIS	6	0	25		27	11	38	0	0	24	106
% STD. ERROR	7.1	17.3	26.0		31.0	0.0	13.1		30.6	28.5	13.6	0.0	0.0	18.4	
EST. % ACTIVE	64.1														

9.24 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY  
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ACTIVE USE

STATE	TOTAL ACTIVE	PER- SONAL	EMERG MED SVCE UNDER NOT UND FAR135 FAR135	AIR TAXI	COMMUTR CORP- CARRIER ORATE	INSTRUC TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHER WK USE	BUSS NESS	OTHER	IN- ACTIVE
OKLAHOMA													
EST. NO. ACTIVE	92	26	DIS	0	6	7	8	11	16	0	DIS	7	69
% STD. ERROR	11.9	20.7	0.0	0.0	34.3	28.8	38.0	30.3	22.5	0.0	0.0	104.7	
EST. % ACTIVE	57.2												
OREGON													
EST. NO. ACTIVE	282	13	DIS	DIS	17	25	22	67	29	43	15	12	126
% STD. ERROR	5.4	26.0			23.2	18.5	17.7	12.4	19.5	13.3	24.6	27.8	
EST. % ACTIVE	69.2												
PENNSYLVANIA													
EST. NO. ACTIVE	258	37	39	DIS	34	39	20	31	21	8	DIS	9	149
% STD. ERROR	6.2	17.1	26.5		21.7	12.2	20.6	19.0	15.8	30.5	19.0	32.3	
EST. % ACTIVE	63.3												
RHODE ISLAND													
EST. NO. ACTIVE	10	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	5
% STD. ERROR	21.4												
EST. % ACTIVE	67.5												
SOUTH CAROLINA													
EST. NO. ACTIVE	67	DIS	7	0	0	6	DIS	12	21	DIS	5	8	50
% STD. ERROR	13.3		25.3	0.0	0.0	24.7		29.1	18.5		35.2	70.7	
EST. % ACTIVE	57.5										0.0		
SOUTH DAKOTA													
EST. NO. ACTIVE	9	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	3
% STD. ERROR	29.5												
EST. % ACTIVE	75.0												
TENNESSEE													
EST. NO. ACTIVE	92	7	8	DIS	DIS	12	8	DIS	32	0	0	9	37
% STD. ERROR	8.5	36.7	30.5			19.9	28.6		14.8	0.0	30.9	26.4	
EST. % ACTIVE	71.6												
TEXAS													
EST. NO. ACTIVE	599	81	8	18	185	32	49	21	115	14	DIS	32	274
% STD. ERROR	3.4	11.0	46.7	28.5	6.2	13.3	12.9	20.8	8.0	26.2	17.5	16.6	
EST. % ACTIVE	68.6												
UTAH													
EST. NO. ACTIVE	70	DIS	11	DIS	22	0	DIS	0	5	DIS	0	0	35
% STD. ERROR	10.4		33.6		19.5	0.0	0.0		34.0		0.0	0.0	
EST. % ACTIVE	66.4												

9.24 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY  
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ACTIVE USE

STATE	TOTAL ACTIVE	EMERG MED SVCE										AIR COMMUTR CORP- INSTRUCAERIAL AERIAL EXTNL OTHR WK BUSI-										IN- ACTIVE
		PER- SONAL	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	TAXI	CARRIER	ORATE	TIONAL	APPL	OBS	LOAD	USE	NESS	OTHER	
VERMONT	15	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	5
EST. NO. ACTIVE	23.9																					
% STD. ERROR	75.7																					
EST. % ACTIVE																						
VIRGINIA	97	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	26
EST. NO. ACTIVE	11.2																					
% STD. ERROR	79.0																					
EST. % ACTIVE																						
WASHINGTON	233	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	116
EST. NO. ACTIVE	6.6																					
% STD. ERROR	66.8																					
EST. % ACTIVE																						
WEST VIRGINIA	41	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	3
EST. NO. ACTIVE	11.6																					
% STD. ERROR	92.6																					
EST. % ACTIVE																						
WISCONSIN	45	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	57
EST. NO. ACTIVE	15.6																					
% STD. ERROR	44.0																					
EST. % ACTIVE																						
WYOMING	40	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	6
EST. NO. ACTIVE	14.0																					
% STD. ERROR	87.9																					
EST. % ACTIVE																						
PUERTO RICO	0	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	0
EST. NO. ACTIVE	0.0																					
% STD. ERROR	0.0																					
EST. % ACTIVE																						
TOTAL	7,488	1,072	285	216	1,342	21	727	695	833	1,298	263	104	416	216	2,915							
EST. NO. ACTIVE	0.6	2.6	6.1	7.1	1.8	12.3	2.7	3.2	3.4	2.0	7.5	8.4	4.0	9.3								
% STD. ERROR	72.0																					
EST. % ACTIVE																						

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.  
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

9.25 1989 ROTORCRAFT TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY  
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PRIMARY USE													
STATE	EMERG MED SVCE				OTHER								
	PER- SONAL	UNDER FAR 135	NOT UND FAR 135	AIR TAXI	COMMUTER CARRIER	CORP- ORATE	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI- NESS	TOTAL
ALABAMA													
EST. TOT. HOURS	231	4,726	DIS	DIS	0	2,275	390	7,344	3,266	2,599	0	0	22,813
% STD. ERROR	63.2	24.7			0.0	24.9	32.0	44.7	21.2	34.1	0.0	0.0	16.5
ALASKA													
EST. TOT. HOURS	360	DIS	DIS	80,198	0	5,781	100	0	4,937	6,546	DIS	2,573	101,564
% STD. ERROR	22.6			6.7	0.0	23.7	47.5	0.0	27.0	33.2		28.0	6.0
ARIZONA													
EST. TOT. HOURS	1,987	0	DIS	14,584	0	3,515	11,505	2,395	21,149	DIS	7,331	1,490	69,153
% STD. ERROR	20.3	0.0		17.3	0.0	27.8	20.5	95.4	13.6		29.4	28.1	8.6
ARKANSAS													
EST. TOT. HOURS	765	DIS	DIS	DIS	0	0	DIS	2,339	2,386	0	0	0	7,641
% STD. ERROR	32.4				0.0	0.0		38.2	31.7	0.0	0.0	0.0	16.2
CALIFORNIA													
EST. TOT. HOURS	8,434	8,652	15,122	47,463	0	23,001	100,293	65,797	157,840	22,387	3,078	5,642	447,674
% STD. ERROR	15.3	16.7	19.3	8.6	0.0	10.3	7.3	9.1	6.3	11.9	26.9	13.8	3.4
COLORADO													
EST. TOT. HOURS	498	4,822	2,712	DIS	DIS	2,555	1,066	3,769	12,165	4,001	0	1,921	32,864
% STD. ERROR	53.7	27.7	31.2			30.5	43.6	29.6	20.9	29.4	0.0	32.9	11.6
CONNECTICUT													
EST. TOT. HOURS	589	1,751	DIS	2,232	0	10,927	8,502	0	0	0	0	DIS	23,984
% STD. ERROR	30.0	47.8		21.7	0.0	14.9	21.0	0.0	0.0	0.0	0.0	0.0	11.4
DELAWARE													
EST. TOT. HOURS	DIS	0	DIS	0	0	1,892	DIS	DIS	2,798	0	0	1,329	9,434
% STD. ERROR		0.0		0.0	0.0	24.5			34.2	0.0	0.0	28.0	21.2
DIST. OF COLUMBIA													
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	5,229
% STD. ERROR													24.0

9.25 1989 ROTORCRAFT TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY  
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PRIMARY USE

STATE	PER- SONAL	EMERG MED SVCE			AIR TAXI	COMMUTER CARRIER	CORP- ORATE	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI- NESS	OTHER	TOTAL
		UNDER FAR 135	NOT UND FAR 135	UND FAR 135											
FLORIDA															
EST. TOT. HOURS	10,137	7,492	5,907	24,015	DIS	8,772	21,282	30,105	46,513	1,402	3,944	3,933	DIS	170,135	5.5
% STD. ERROR	14.1	36.2	22.4	11.5		13.3	14.0	13.1	9.1	63.2	24.1	15.3			
GEORGIA															
EST. TOT. HOURS	892	0	DIS	3,775	0	DIS	3,764	4,094	39,659	0	0	1,046	0	53,778	8.6
% STD. ERROR	27.4	0.0		25.0	0.0		32.5	37.1	8.9	0.0	0.0	30.3	0.0		
HAWAII															
EST. TOT. HOURS	459	DIS	DIS	71,074	DIS	DIS	DIS	2,176	15,932	0	DIS	DIS	0	103,653	7.5
% STD. ERROR	36.4			8.9				42.6	21.4	0.0			0.0		
IDAHO															
EST. TOT. HOURS	2,171	0	DIS	3,893	0	1,978	DIS	5,056	DIS	2,596	0	511	DIS	22,545	11.1
% STD. ERROR	24.8	0.0		25.2	0.0	24.7		23.1		38.8	0.0	33.6			
ILLINOIS															
EST. TOT. HOURS	975	4,172	3,243	DIS	0	2,692	2,582	3,707	3,071	2,394	DIS	1,923	0	27,473	11.6
% STD. ERROR	26.4	36.7	25.8		0.0	22.3	35.2	22.4	27.8	87.4		26.3	0.0		
INDIANA															
EST. TOT. HOURS	1,609	1,096	0	DIS	DIS	2,782	933	4,631	15,926	0	DIS	2,011	DIS	29,568	10.3
% STD. ERROR	26.4	41.4	0.0			21.6	47.4	22.7	17.3			31.7			
IOWA															
EST. TOT. HOURS	163	1,459	DIS	0	0	DIS	3,690	1,010	DIS	DIS	0	0	DIS	12,910	21.9
% STD. ERROR	50.0	42.6		0.0	0.0		30.1	63.7			0.0	0.0			
KANSAS															
EST. TOT. HOURS	380	DIS	DIS	0	0	0	DIS	1,337	5,934	0	0	316	DIS	11,080	20.5
% STD. ERROR	41.8			0.0	0.0	0.0		50.1	33.7	0.0	0.0	34.7			
KENTUCKY															
EST. TOT. HOURS	152	DIS	DIS	DIS	0	6,023	DIS	0	6,541	0	DIS	457	0	15,884	11.2
% STD. ERROR	38.5				0.0	17.0		0.0	21.8	0.0		33.5	0.0		

9.25 1989 ROTORCRAFT TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY  
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PRIMARY USE

STATE	EMERG MED SVCE														TOTAL
	PER- SONAL	UNDER FAR	135	NOT UND	AIR TAXI	COMMUTER CARRIER	CORP- ORATE	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHER USE	BUSI- NESS	OTHER	
LOUISIANA	2,000	1,241	5,077	441,847	DIS	6",053	DIS	6,130	699	6,084	0	965	DIS	511,657	
EST. TOT. HOURS	25.1	52.0	58.0	3.5		10.4		20.1	35.9	72.7	0.0	35.6		3.2	
% STD. ERROR															
MAINE	230	0	0	DIS	0	0	DIS	869	2,110	0	0	DIS	0	4,623	
EST. TOT. HOURS	32.5	0.0	0.0		0.0	0.0		53.9	38.4	0.0	0.0		0.0	22.2	
% STD. ERROR															
MARYLAND	1,309	0	11,849	DIS	0	2,996	3,755	0	10,675	0	0	1,008	DIS	31,635	
EST. TOT. HOURS	24.2	0.0	17.1		0.0	24.1	24.6	0.0	16.5	0.0	0.0	26.0		8.7	
% STD. ERROR															
MASSACHUSETTS	1,248	DIS	0	1,792	DIS	11,078	12,133	2,082	7,686	1,678	DIS	DIS	0	39,631	
EST. TOT. HOURS	26.1		0.0	25.4		15.5	17.7	40.0	24.0	39.7			0.0	9.6	
% STD. ERROR															
MICHIGAN	1,998	DIS	DIS	7,724	0	2,330	3,910	1,898	14,407	DIS	0	1,384	DIS	35,872	
EST. TOT. HOURS	17.6			19.5	0.0	26.0	22.1	38.9	18.9		0.0	24.8		9.4	
% STD. ERROR															
MINNESOTA	82	DIS	DIS	0	0	DIS	1,277	9,831	5,912	0	DIS	DIS	0	17,862	
EST. TOT. HOURS	49.2			0.0	0.0		41.2	17.8	18.4	0.0			0.0	11.8	
% STD. ERROR															
MISSISSIPPI	313	DIS	DIS	0	0	DIS	DIS	3,768	5,721	0	0	DIS	DIS	12,107	
EST. TOT. HOURS	37.9			0.0	0.0			30.2	20.4	0.0	0.0			13.8	
% STD. ERROR															
MISSOURI	1,370	3,751	4,441	4,073	DIS	1,670	1,138	1,343	15,945	1,879	0	DIS	0	38,258	
EST. TOT. HOURS	26.9	39.7	26.4	29.9		27.0	29.2	44.8	16.6	32.0	0.0		0.0	10.4	
% STD. ERROR															
MONTANA	172	1,491	0	2,522	DIS	2,080	DIS	1,968	2,393	6,254	0	346	0	19,072	
EST. TOT. HOURS	45.1	35.2	0.0	34.4		38.2		41.2	30.8	117.5	0.0	33.3	0.0	16.0	
% STD. ERROR															

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PRIMARY USE

STATE	PER- SONAL	EMERG MED SVCE			AIR TAXI	COMMUTER CARRIER	CORP- ORATE	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI- NESS	OTHER	TOTAL
		UNDER FAR	UND FAR	NOT UND FAR											
NEBRASKA EST. TOT. HOURS & STD. ERROR	DIS 3,879 23.1	DIS 4,524 27.8	DIS 0 0.0	DIS 9,237 19.2	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 24,325 27.9	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 178 41.0	DIS 0 0.0	790 34.1
NEVADA EST. TOT. HOURS & STD. ERROR	DIS 3,280 19.1	DIS 0 0.0	DIS 0 0.0	DIS 1,764 27.6	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 1,819 34.4	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 1,970 24.8	DIS 0 0.0	41,962 15.9
NEW HAMPSHIRE EST. TOT. HOURS & STD. ERROR	DIS 1,217 43.0	DIS 1,744 22.5	DIS 0 0.0	DIS 15,864 11.7	DIS 20,236 10.9	DIS 7,463 19.0	DIS 3,629 31.9	DIS 4,570 22.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 1,121 45.4	DIS 272 46.1	13,568 11.0
NEW JERSEY EST. TOT. HOURS & STD. ERROR	DIS 183 72.8	DIS 0 0.0	DIS 0 0.0	DIS 1,829 31.1	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 274 47.9	DIS 0 0.0	7,221 34.4
NEW MEXICO EST. TOT. HOURS & STD. ERROR	DIS 3,164 19.8	DIS 1,782 39.1	DIS 0 0.0	DIS 5,349 23.6	DIS 0 0.0	DIS 6,478 16.0	DIS 2,483 28.7	DIS 27,072 13.8	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 3,216 21.9	DIS 2,612 31.0	67,804 7.2
NEW YORK EST. TOT. HOURS & STD. ERROR	DIS 318 26.4	DIS 4,445 24.8	DIS 0 0.0	DIS 1,904 24.2	DIS 0 0.0	DIS 1,943 28.3	DIS 1,525 40.4	DIS 9,996 22.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 609 33.2	DIS 0 0.0	22,399 11.3
NORTH CAROLINA EST. TOT. HOURS & STD. ERROR	DIS 1,208 30.0	DIS 6,842 27.0	DIS 0 0.0	DIS 1,626 32.5	DIS 0 0.0	DIS 7,017 14.1	DIS 3,629 29.3	DIS 14,901 17.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 1,902 19.2	DIS 0 0.0	53,609 8.2
NORTH DAKOTA EST. TOT. HOURS & STD. ERROR	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	0 0.0
OHIO EST. TOT. HOURS & STD. ERROR	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	DIS 0 0.0	0 0.0



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STATE	PRIMARY USE												TOTAL
	PER- SONAL	EMERG MED SVCE UNDER NOT UND FAR 135 FAR 135	AIR TAXI	COMMUTER CARRIER	CORP- ORATE	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI- NESS	OTHER	
OKLAHOMA													
EST. TOT. HOURS	2,145	DIS	0	1,959	0	1,064	3,249	6,479	0	0	DIS	1,096	21,361
% STD. ERROR	23.8	0.0	0.0	35.9	0.0	29.5	29.7	23.7	0.0	0.0		141.7	13.8
OREGON													
EST. TOT. HOURS	535	DIS	DIS	3,575	0	7,291	19,945	10,940	32,960	6,790	312	829	95,024
% STD. ERROR	26.7			27.0	0.0	18.8	13.7	20.5	13.6	24.9	26.9	29.1	6.8
PENNSYLVANIA													
EST. TOT. HOURS	1,898	14,152	DIS	14,872	0	11,627	7,535	8,231	3,536	DIS	2,330	326	70,076
% STD. ERROR	19.5	28.5		21.6	0.0	12.7	19.6	19.1	32.4		19.7	42.2	7.9
RHODE ISLAND													
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	2,041
% STD. ERROR													25.2
SOUTH CAROLINA													
EST. TOT. HOURS	DIS	1,675	0	0	0	1,181	1,459	12,643	DIS	504	0	870	21,569
% STD. ERROR		24.9	0.0	0.0	0.0	24.7	29.4	21.2		35.4	0.0	144.1	17.2
SOUTH DAKOTA													
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	1,838
% STD. ERROR													30.0
TENNESSEE													
EST. TOT. HOURS	203	3,539	DIS	DIS	0	2,573	DIS	11,496	0	0	2,104	92	24,176
% STD. ERROR	38.9	31.1			0.0	21.6		16.5	0.0	0.0	32.4	27.4	10.1
TEXAS													
EST. TOT. HOURS	5,808	4,296	10,731	122,532	DIS	5,327	6,715	42,743	1,771	DIS	4,034	2,491	232,607
% STD. ERROR	13.5	47.0	29.1	6.5		15.1	21.6	9.8	31.2		18.4	21.1	4.2
UTAH													
EST. TOT. HOURS	DIS	6,295	DIS	8,038	0	DIS	DIS	1,165	DIS	DIS	0	0	22,335
% STD. ERROR		32.9		21.4	0.0			32.9			0.0	0.0	13.6

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PRIMARY USE

STATE	EMERG MED SVCE														TOTAL
	PER- SONAL	UNDER FAR 135	DIS	DIS	AIR TAXI	COMMUTER CARRIER	CORP- ORATE	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI- NESS	OTHER	
VERMONT	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	862 38.6
EST. TOT. HOURS															
% STD. ERROR															
VIRGINIA	1,064 29.4	551 82.6	DIS	DIS	DIS	0 0.0	5,452 20.1	3,682 28.6	3,719 68.3	6,977 19.7	0 0.0	DIS	475 42.1	841 46.4	24,649 12.1
EST. TOT. HOURS															
% STD. ERROR															
WASHINGTON	2,096 24.4	2,810 29.8	0 0.0	DIS	DIS	0 0.0	15,040 16.3	6,779 21.1	10,935 17.9	9,158 18.3	22,999 19.0	DIS	684 34.6	405 42.1	72,039 9.3
EST. TOT. HOURS															
% STD. ERROR															
WEST VIRGINIA	DIS	DIS	0 0.0	DIS	DIS	0 0.0	3,654 22.1	0 0.0	DIS	4,445 21.4	0 0.0	0 0.0	1,333 30.9	0 0.0	12,559 12.3
EST. TOT. HOURS															
% STD. ERROR															
WISCONSIN	157 48.0	DIS	0 0.0	DIS	DIS	0 0.0	DIS	DIS	1,527 33.0	4,080 30.1	DIS	0 0.0	0 0.0	0 0.0	8,619 19.5
EST. TOT. HOURS															
% STD. ERROR															
WYOMING	0 0.0	DIS	0 0.0	2,405 28.6	DIS	DIS	DIS	0 0.0	1,804 32.4	0 0.0	0 0.0	1,773 26.4	848 37.2	0 0.0	6,723 16.8
EST. TOT. HOURS															
% STD. ERROR															
PUERTO RICO	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0
EST. TOT. HOURS															
% STD. ERROR															
TOTAL	69,962 4.6	101,697 6.8	103,509 7.5	896,128 2.0	14,378 14.6	268,340 3.4	271,963 4.0	236,831 4.3	626,002 2.7	133,773 9.0	34,209 10.4	53,361 5.2	21,634 11.4	2,825,757 0.9	
EST. TOT. HOURS															
% STD. ERROR															

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.  
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

## 5. AIRFRAME HOURS

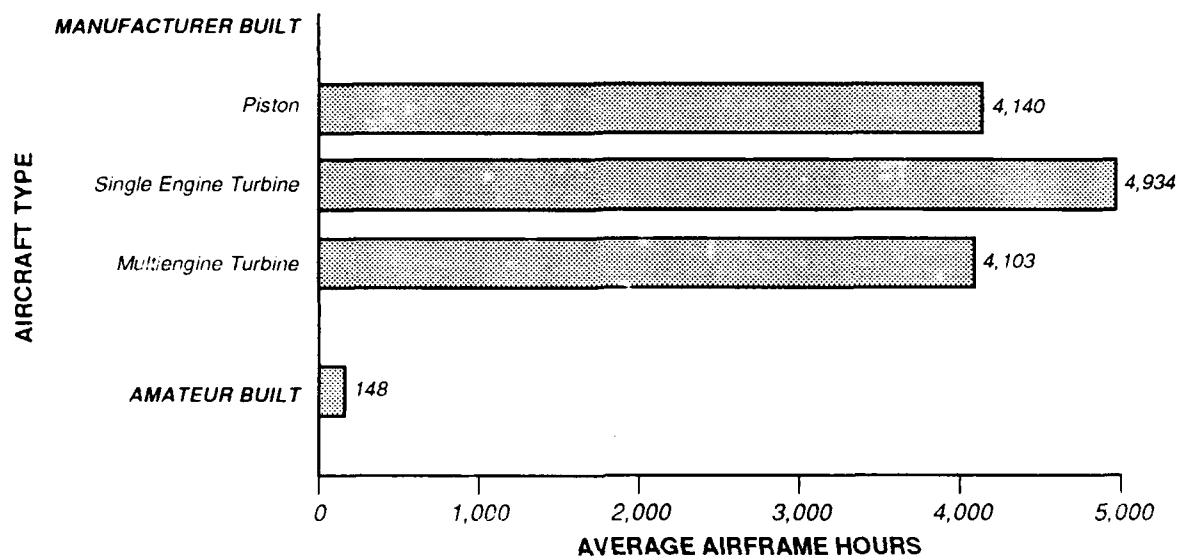
The subject of aircraft aging is becoming increasingly important because of recent questions raised about the safety of commercial air carriers relative to the age of their aircraft. Similar questions might be asked of the rotorcraft fleet. Data in this chapter can serve as input to studies correlating age and safety.

This section presents two tables and one figure: Table 9.26 presents data on the average airframe hours per active rotorcraft by rotorcraft type. Table 9.27 presents the average airframe hours per active rotorcraft by SDR Rotorcraft Manufacturer/Model Group. Figure 9.9 graphically displays the average airframe hours per rotorcraft type.

Major findings of this section include:

- o The total airframe hours for the active rotorcraft population is 31.4 million hours.
- o The active rotorcraft population has an average of approximately 4,191 lifetime airframe hours per rotorcraft.
- o Although the piston rotorcraft have the greatest population, they do not have the highest total airframe hours. Single engine turbine rotorcraft have both the highest total airframe hours (16.0 million) and average airframe hours (4,934).
- o As one might expect, the amateur built rotorcraft have both the lowest total airframe hours and the lowest average airframe hours, with only 84,341 total airframe hours and 147.5 average airframe hours.

Figure 9.9  
1989 ROTORCRAFT AVERAGE AIRFRAME HOURS  
BY ROTORCRAFT TYPE



SOURCE: Table 9.26

9.26 1989 ROTORCRAFT TOTAL AIRFRAME HOURS AND AVERAGE AIRFRAME HOURS  
BY ROTORCRAFT TYPE

PAGE 1 OF 1

ROTORCRAFT TYPE	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
MANUFACTURER BUILT:									
PISTON TOTAL:	3,994	2,684	1.2	67.2	0.8	11,321,890	2.2	4,139.7	1.6
TURBINE: SINGLE ENGINE	3,616	3,248	0.5	89.8	0.4	15,969,102	1.2	4,934.3	1.1
TURBINE: MULTI - ENGINE	1,069	984	0.7	92.0	0.7	4,048,312	2.8	4,103.3	2.7
TURBINE TOTAL:	4,685	4,232	0.4	90.3	0.4	20,017,414	1.1	4,749.0	1.0
MANUFACTURER BUILT TOTAL:	8,679	6,916	0.5	79.7	0.4	31,339,304	1.1	4,526.2	0.9
AMATEUR BUILT	1,790	572	3.5	32.0	1.1	84,341	7.3	147.5	6.4
TOTAL - ALL ROTORCRAFT:	10,469	7,488	0.6	71.5	0.4	31,423,644	1.1	4,191.2	0.9

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

9.27 1989 ROTORCRAFT TOTAL AIRFRAME HOURS AND AVERAGE AIRFRAME HOURS  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PAGE 1 OF 3

MANUFACTURER/ MODEL GROUP	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
OTHER 1 (*)	126	93	14.7	73.8	10.9	289,913	21.6	3,117.3	15.8
OTHER 2 (*)	113	91	4.4	80.7	3.5	264,069	10.6	2,896.4	9.7
OTHER 3 (*)	142	111	3.3	78.4	2.6	547,328	10.4	4,916.1	9.9
OTHER 4 (*)	1,790	572	3.5	31.9	1.1	84,341	7.3	147.5	6.4
AERORSJ2	38	20	13.3	51.7	6.9	4,444	17.4	226.4	11.2
AEROSPAS355	109	108	0.6	99.0	0.6	407,886	3.6	3,780.5	3.5
AEROSPAS316	91	61	6.4	67.4	4.3	364,388	8.8	5,945.0	6.1
AGUSTA205	32	30	3.4	95.0	3.2	226,074	7.8	7,436.6	7.0
AGUSTAA109	66	66	0.0	100.0	0.0	69,510	7.0	1,053.2	7.0
AIRSPC18	23	15	14.9	64.3	9.6	6,661	22.3	450.5	16.7
ARCRNEH37	45	0	0.0	0.0	0.0	0	0.0	0.0	0.0
BELL 204	26	22	5.2	84.3	4.4	150,004	7.7	6,846.6	5.7
BELL 206	1,900	1,810	0.3	95.3	0.3	10,127,647	1.1	5,596.1	1.0
BELL 212	117	106	3.1	90.2	2.8	910,447	6.0	8,626.7	5.1
BELL 222	83	70	2.5	84.3	2.1	172,941	4.2	2,472.3	3.4
BELL 412	61	61	0.0	100.0	0.0	328,385	7.5	5,383.4	7.5
BELL 47	838	579	2.3	69.1	1.6	3,681,220	3.3	6,354.6	2.3
BOLKMS105	175	171	1.9	97.7	1.9	682,275	10.5	3,989.0	10.4
BOLKMS117	113	110	2.9	97.2	2.8	124,113	12.6	1,129.8	12.3
ENSTRMF28	421	330	2.2	78.5	1.7	451,611	5.8	1,371.5	5.3
H23/HTE	36	12	22.9	32.1	7.3	41,877	35.8	3,624.0	27.5

9.27 1989 ROTORCRAFT TOTAL AIRFRAME HOURS AND AVERAGE AIRFRAME HOURS  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PAGE 2 OF 3

MANUFACTURER/ MODEL GROUP	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
H34/55	29	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS
HILLERFH1100	64	29	20.7	45.2	9.4	80,818	26.6	2,791.4	16.6
HILLERUH12	585	373	3.0	63.8	1.9	1,741,753	5.2	4,671.5	4.3
HUGHES269	676	476	2.0	70.4	1.4	2,157,515	3.4	4,535.3	2.7
HUGHES369	600	551	1.0	91.8	0.9	2,370,203	4.8	4,304.2	4.7
HYNES B2	126	53	10.2	41.9	4.3	203,979	43.9	3,862.6	42.6
MACDOUG369	61	61	0.0	100.0	0.0	71,631	6.0	1,174.3	6.0
MILITARY204	201	142	6.3	70.8	4.5	775,646	7.7	5,447.9	4.4
MILITARY47	395	235	3.7	59.4	2.2	1,291,723	5.3	5,454.5	3.8
MODFD47	53	37	10.8	70.4	7.6	143,524	20.6	3,848.2	17.5
ORLHELH19	73	44	33.5	60.3	20.2	288,718	35.5	6,554.1	11.6
ORLHELH58	33	11	60.3	33.3	20.1	27,500	60.3	2,500.0	0.0
ROBSINR22	408	395	0.6	96.9	0.6	636,350	7.7	1,609.8	7.7
SCHWZH269	54	48	2.0	89.6	1.8	55,947	6.2	1,156.0	5.8
SKRSKYS55	34	7	55.0	20.0	11.0	41,273	55.5	6,069.5	6.8
SKRSKYS58	72	35	17.9	48.6	8.7	164,166	20.5	4,692.4	9.9
SKRSKYS58T	38	27	11.2	71.4	8.0	253,763	13.3	9,349.2	7.2
SKRSKYS61	28	14	6.7	49.6	3.3	150,953	8.5	10,869.3	5.3
SKRSKYS76	175	167	1.0	95.6	0.9	654,475	3.4	3,913.1	3.3
SNIAS 350	271	255	1.1	94.0	1.0	877,252	7.5	3,442.6	7.4
SNIAS SA318	21	0	0.0	0.0	0.0	0	0.0	0.0	0.0

9.27 1989 ROTORCRAFT TOTAL AIRFRAME HOURS AND AVERAGE AIRFRAME HOURS  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PAGE 3 OF 3

MANUFACTURER/ MODEL GROUP	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
SNIAS SA341	29	20	15.4	68.7	10.6	59,919	20.8	3,009.4	14.0
TH55	60	42	3.8	70.1	2.6	331,409	5.6	7,874.6	4.1
TOMCAT	38	24	13.1	63.8	8.3	91,204	19.4	3,762.3	14.4
TOTAL	10,469	7,488	0.6	71.5	0.4	31,423,640	1.1	4,191.2	0.9

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

(\*) THE "OTHER" CATEGORIES REPRESENT:

- OTHER 1 - MANUFACTURER BUILT - PISTON
- OTHER 2 - MANUFACTURER BUILT - TURBINE-SINGLE ENGINE
- OTHER 3 - MANUFACTURER BUILT - TURBINE-MULTI ENGINE
- OTHER 4 - AMATEUR BUILT

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.



## 6. LAW ENFORCEMENT ROTORCRAFT

Some of the rotorcraft in the rotorcraft fleet are used for law enforcement activities. These activities include surveillance, instructional use, and emergency medical service--to name a few. For the purpose of this section, a law enforcement rotorcraft is one that was used for law enforcement 90 percent of the time or more during the year. This section presents the number of rotorcraft used in law enforcement activities, the total flight hours, and the primary use of law enforcement rotorcraft.

This section presents six tables and three figures. Tables 9.28-9.31 present the estimated number of law enforcement rotorcraft, total flight hours and average flight hours in four different ways, by: 1) aircraft type; 2) region of based rotorcraft; 3) SDR Rotorcraft Manufacturer/Model Group; and 4) state of based rotorcraft. Tables 9.32 and 9.33 present the number of law enforcement rotorcraft and total flight hours by expanded use category. Definitions of expanded use categories are listed in Appendix F.

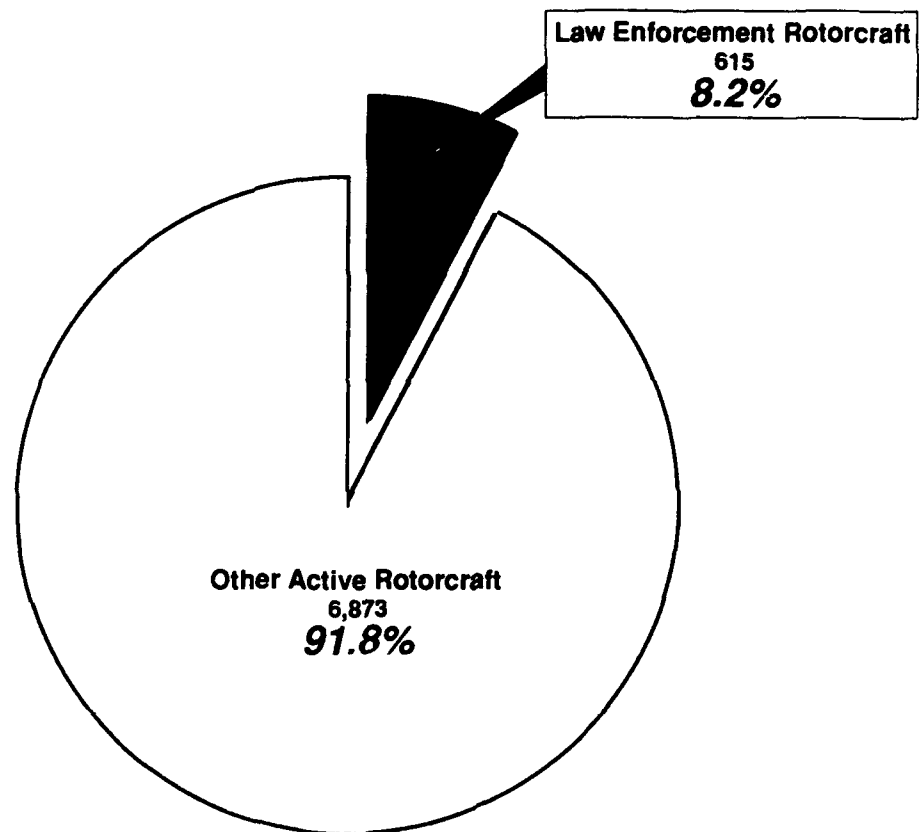
Figure 9.10 shows the number of law enforcement rotorcraft as a percent of all active rotorcraft. Figure 9.11 displays law enforcement rotorcraft total flight hours by rotorcraft type. Figure 9.12 displays two graphs--the first one shows the number of law enforcement rotorcraft in each expanded use category; the second graph depicts the total hours flown by law enforcement rotorcraft in each expanded use category.

Some key observations to be drawn from Tables 9.28-9.33 and the figures in this section include:

- o Approximately 615 out of 7,488 active rotorcraft are used for law enforcement purposes.
- o Law enforcement rotorcraft comprise 8.2 percent of the active rotorcraft fleet.
- o Law enforcement rotorcraft flew more than 331,000 hours, 11.7 percent of the total hours flown by rotorcraft in 1989.
- o Law enforcement rotorcraft averaged 546 hours, with a low of 314 average hours for multiengine turbine rotorcraft and a high of 609 average hours for single engine turbine rotorcraft.
- o More single engine turbine rotorcraft than any other type of rotorcraft are used for law enforcement activities, comprising 60 percent of the active law enforcement rotorcraft.
- o Aerial observation is the most frequent primary use of law enforcement rotorcraft, with 68 percent of the law enforcement rotorcraft primarily used for this purpose. The aerial observation use category accounted for more than 252,000 total flight hours or 76 percent of the total flight hours by law enforcement rotorcraft.

- o The second and third highest use categories are emergency medical service not under FAR 135, with 24,105 flight hours, and aerial application, with 13,904 flight hours.
- o The three regions with the greatest number of law enforcement rotorcraft are: Western-Pacific with 194; Southern with 141; and Eastern with 110 rotorcraft.
- o The three states with the greatest number of rotorcraft in law enforcement are: California with 149; Florida with 76; and Texas with 41.
- o The state of California alone accounted for 34 percent of the total law enforcement flight hours in 1989.

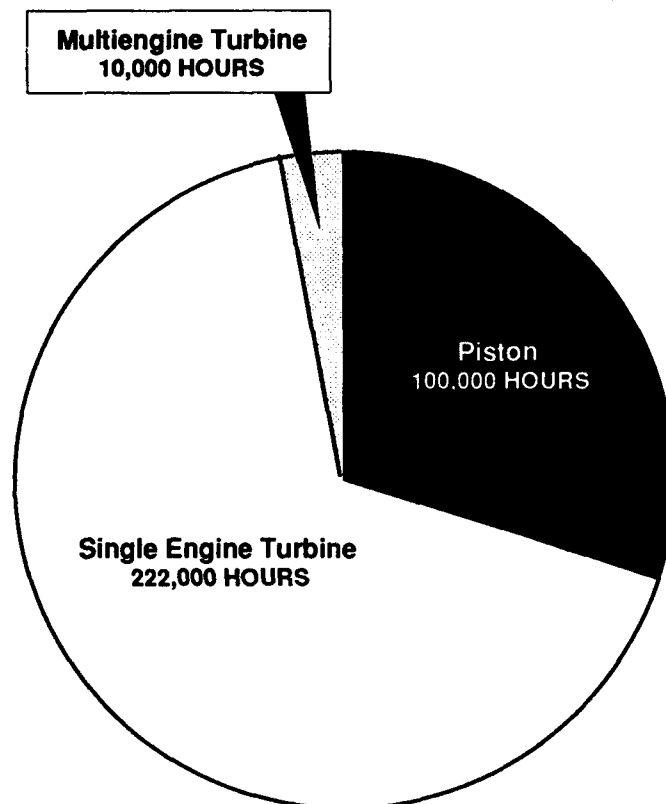
**Figure 9.10**  
**1989 LAW ENFORCEMENT ROTORCRAFT**



**Total Active Rotorcraft: 7,488 = 100%**

**SOURCE: Table 9.28**

**Figure 9.11**  
**1989 LAW ENFORCEMENT ROTORCRAFT**  
**TOTAL FLIGHT HOURS**  
**BY ROTORCRAFT TYPE**

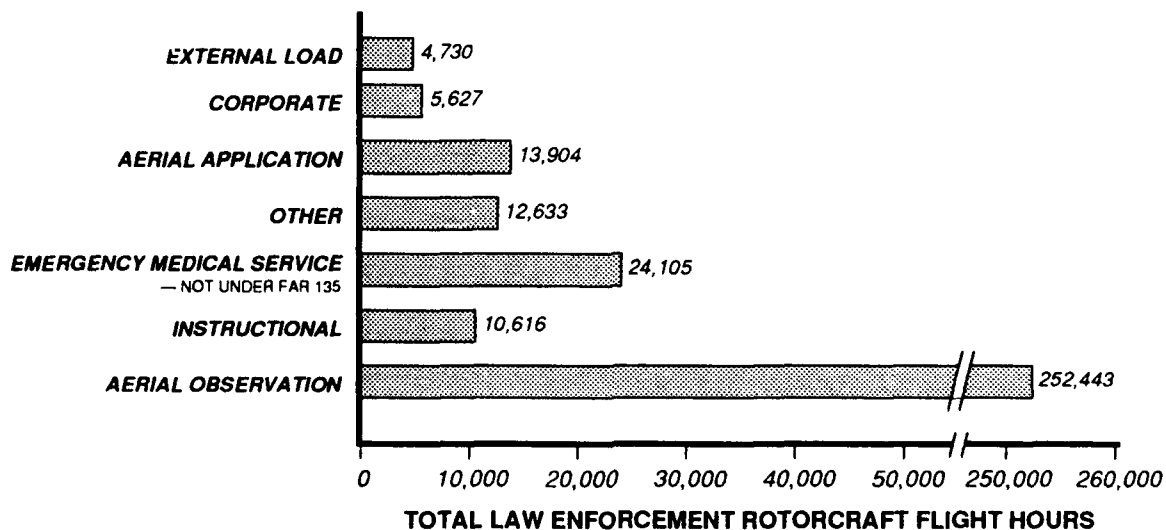
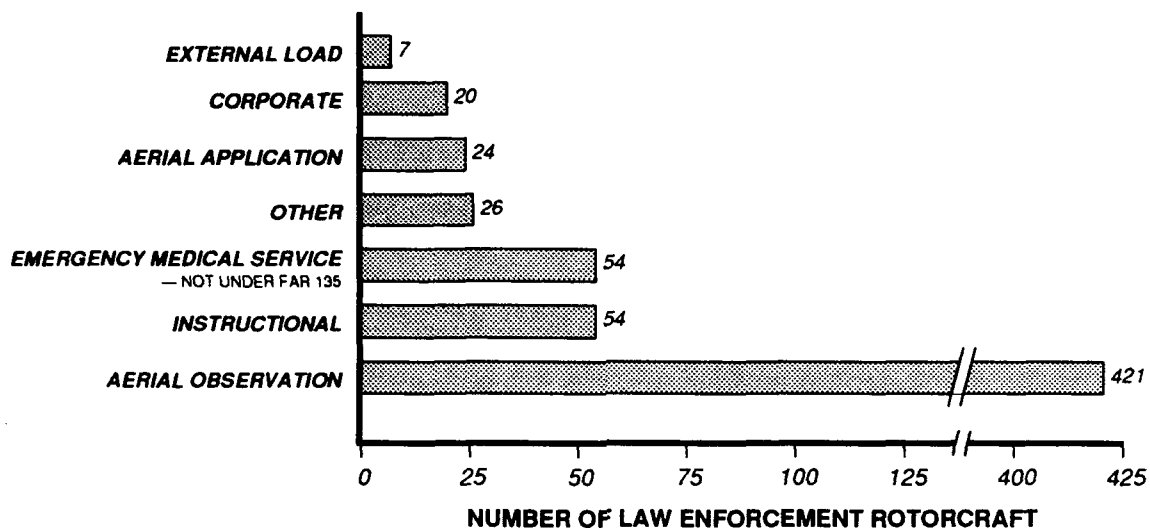


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*Amateur Built Rotorcraft did not have any law enforcement flight hours.*

**SOURCE: Table 9.28**

**Figure 9.12**  
**1989 NUMBER OF LAW ENFORCEMENT**  
**ROTORCRAFT AND TOTAL FLIGHT HOURS**  
**BY SELECTED PRIMARY USE CATEGORIES**



**SOURCE:** Tables 9.32 and 9.33

9.28 1989 LAW ENFORCEMENT ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY ROTORCRAFT TYPE

PAGE 1 OF 1

ROTORCRAFT TYPE	ESTIMATE OF NUMBER LAW ENFORCEMENT	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
MANUFACTURER BUILT:						
PISTON TOTAL:	216	5.1	99,875	7.8	459.4	4.7
TURBINE: SINGLE ENGINE	367	3.8	221,765	4.7	608.8	2.8
TURBINE: MULTI - ENGINE	31	16.1	9,680	24.6	313.7	5.8
TURBINE TOTAL:	398	3.8	231,444	4.6	587.6	2.7
MANUFACTURER BUILT TOTAL:	615	3.1	331,319	4.0	545.8	2.3
AMATEUR BUILT:	0	0.0	0	0.0	0.0	0.0
TOTAL - ALL ROTORCRAFT:	615	3.1	331,319	4.0	545.8	2.3

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

LAW ENFORCEMENT ROTORCRAFT ARE ONES THAT WERE USED IN LAW ENFORCEMENT ACTIVITIES 90% OR MORE DURING THE YEAR.

9.29 1989 LAW ENFORCEMENT ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PAGE 1 OF 3

MANUFACTURER/ MODEL GROUP	ESTIMATE OF NUMBER LAW ENFORCEMENT	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
OTHER 1 (*)	0	0.0	0	0.0	0.0	0.0
OTHER 2 (*)	21	18.5	10,354	25.1	484.5	16.9
OTHER 3 (*)	10	23.1	2,642	26.4	263.4	12.8
OTHER 4 (*)	0	0.0	0	0.0	0.0	0.0
AERORSJ2	0	0.0	0	0.0	0.0	0.0
AEROSPAS355	DIS	DIS	DIS	DIS	DIS	DIS
AEROSP3A316	0	0.0	0	0.0	0.0	0.0
AGUSTA205	0	0.0	0	0.0	0.0	0.0
AGUSTAA109	0	0.0	0	0.0	0.0	0.0
AIRSPC18	0	0.0	0	0.0	0.0	0.0
ARCRNEH37	0	0.0	0	0.0	0.0	0.0
BELL 204	0	0.0	0	0.0	0.0	0.0
BELL 206	166	4.3	106,005	5.1	638.4	2.6
BELL 212	DIS	DIS	DIS	DIS	DIS	DIS
BELL 222	9	16.9	2,679	21.2	299.4	12.9
BELL 412	0	0.0	0	0.0	0.0	0.0
BELL 47	39	15.7	10,888	24.9	276.5	19.2
BOLRMS105	0	0.0	0	0.0	0.0	0.0
BOLRMS117	DIS	DIS	DIS	DIS	DIS	DIS
ENSTRMF28	19	19.9	19,675	23.9	1,025.0	12.3
H23/HTE	0	0.0	0	0.0	0.0	0.0

9.29 1989 LAW ENFORCEMENT ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PAGE 2 OF 3

MANUFACTURER/ MODEL GROUP	ESTIMATE OF NUMBER LAW ENFORCEMENT	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
H34/55	DIS	DIS	DIS	DIS	DIS	DIS
HILLERFH1100	DIS	DIS	DIS	DIS	DIS	DIS
HILLERUH12	DIS	DIS	DIS	DIS	DIS	DIS
HUGHES269	96	7.5	54,073	10.1	561.3	6.8
HUGHES369	93	8.0	75,755	10.3	814.5	6.6
HYNES B2	0	0.0	0	0.0	0.0	0.0
MACDOUG369	22	9.1	11,439	11.3	522.2	6.7
MILITARY204	36	20.9	2,572	38.8	70.9	32.7
MILITARY47	19	18.9	3,305	24.2	173.3	15.2
MODFD47	0	0.0	0	0.0	0.0	0.0
ORLHELH19	0	0.0	0	0.0	0.0	0.0
ORLHEL58	0	0.0	0	0.0	0.0	0.0
ROBSINR22	6	28.2	4,256	30.1	696.9	10.4
SCHWZH269	12	10.8	6,169	14.3	504.5	9.3
SKRSKYS55	0	0.0	0	0.0	0.0	0.0
SKRSKYS58	0	0.0	0	0.0	0.0	0.0
SKRSKYS58T	DIS	DIS	DIS	DIS	DIS	DIS
SKRSKYS61	0	0.0	0	0.0	0.0	0.0
SKRSKYS76	DIS	DIS	DIS	DIS	DIS	DIS
SNIAS 350	20	15.0	11,755	18.3	598.8	10.6
SNIAS SA318	0	0.0	0	0.0	0.0	0.0



9.29 1989 LAW ENFORCEMENT ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PAGE 3 OF 3

MANUFACTURER/ MODEL GROUP	ESTIMATE OF NUMBER LAW ENFORCEMENT	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
SNIAS SA341	0	0.0	0	0.0	0.0	0.0
TH55	24	7.0	2,877	11.7	118.5	9.4
TOMCAT	0	0.0	0	0.0	0.0	0.0
TOTAL	615	3.1	331,319	4.0	545.8	2.3

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

(\*) THE "OTHER" CATEGORIES REPRESENT:

OTHER 1 - MANUFACTURER BUILT - PISTON  
OTHER 2 - MANUFACTURER BUILT - TURBINE-SINGLE ENGINE  
OTHER 3 - MANUFACTURER BUILT - TURBINE-MULTI ENGINE  
OTHER 4 - AMATEUR BUILT

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

LAW ENFORCEMENT ROTORCRAFT ARE ONES THAT WERE USED IN LAW ENFORCEMENT ACTIVITIES 90% OR MORE DURING THE YEAR.

9.30 1989 LAW ENFORCEMENT ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY REGION OF BASED ROTORCRAFT

PAGE 1 OF 1

REGION	ESTIMATE OF NUMBER LAW ENFORCEMENT	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
ALASKAN	DIS	DIS	DIS	DIS	DIS	DIS
CENTRAL	21	14.3	14,155	19.5	638.3	10.4
EASTERN	110	6.4	43,025	6.4	397.1	8.3
GREAT LAKES	56	10.7	19,703	12.3	358.6	9.5
NEW ENGLAND	DIS	DIS	DIS	DIS	DIS	DIS
NORTHWEST MT.	21	19.0	4,594	24.3	223.4	16.0
SOUTHERN	141	5.7	60,927	5.9	443.9	3.8
SOUTHWESTERN	57	8.8	27,063	11.1	513.6	6.9
WESTERN-PACIFIC	194	4.6	156,071	5.9	804.1	4.6
TOTAL	615	3.1	333,543	3.4	546.4	2.3

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

LAW ENFORCEMENT ROTORCRAFT ARE ONES THAT WERE USED IN LAW ENFORCEMENT ACTIVITIES 90% OR MORE DURING THE YEAR.

9.31 1989 LAW ENFORCEMENT ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY STATE OF BASED ROTORCRAFT

PAGE 1 OF 3

STATE	ESTIMATE OF NUMBER LAW ENFORCMT	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
ALABAMA	7	14.3	1,243	31.7	190.9	20.8
ALASKA	DIS	DIS	DIS	DIS	DIS	DIS
ARIZONA	29	13.8	18,076	14.1	622.1	6.4
ARKANSAS	DIS	DIS	DIS	DIS	DIS	DIS
CALIFORNIA	149	6.0	113,698	5.6	764.8	4.8
COLORADO	9	33.3	1,624	36.0	181.8	20.4
CONNECTICUT	DIS	DIS	DIS	DIS	DIS	DIS
DELAWARE	DIS	DIS	DIS	DIS	DIS	DIS
DIST. OF COLUMBIA	21	28.6	2,873	36.3	139.5	38.9
FLORIDA	76	7.9	39,384	7.1	527.8	5.3
GEORGIA	28	14.3	12,129	14.7	448.7	5.7
HAWAII	DIS	DIS	DIS	DIS	DIS	DIS
IDAHO	0	0.0	0	0.0	0.0	0.0
ILLINOIS	DIS	DIS	DIS	DIS	DIS	DIS
INDIANA	16	18.8	5,176	23.2	333.7	22.7
IOWA	5	40.0	3,411	35.5	667.0	4.1
KANSAS	7	28.6	5,690	36.5	853.7	26.4
KENTUCKY	DIS	DIS	DIS	DIS	DIS	DIS
LOUISIANA	7	28.6	1,618	26.1	245.8	15.5
MAINE	0	0.0	0	0.0	0.0	0.0
MARYLAND	25	12.0	12,234	12.1	501.5	6.2
MASSACHUSETTS	9	22.2	4,378	21.7	498.5	12.6
MICHIGAN	21	19.0	7,022	21.3	365.6	13.0

9.31 1989 LAW ENFORCEMENT ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY STATE OF BASED ROTORCRAFT

PAGE 2 OF 3

STATE	ESTIMATE OF NUMBER LAW ENFORCEMENT	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
MINNESOTA	5	40.0	916	32.6	192.6	22.5
MISSISSIPPI	12	25.0	1,428	26.6	115.1	11.2
MISSOURI	10	20.0	5,054	26.6	518.2	14.2
MONTANA	0	0.0	0	0.0	0.0	0.0
NEBRASKA	0	0.0	0	0.0	0.0	0.0
NEVADA	15	20.0	20,357	26.5	343.0	19.3
NEW HAMPSHIRE	0	0.0	0	0.0	0.0	0.0
NEW JERSEY	12	16.7	4,377	15.3	350.8	6.0
NEW MEXICO	DIS	DIS	DIS	DIS	DIS	DIS
NEW YORK	24	12.5	9,252	10.8	388.8	8.4
NORTH CAROLINA	DIS	DIS	DIS	DIS	DIS	DIS
NORTH DAKOTA	0	0.0	0	0.0	0.0	0.0
OHIO	12	16.7	5,758	24.7	482.6	17.7
OKLAHOMA	7	28.6	4,136	26.8	602.2	3.1
OREGON	DIS	DIS	DIS	DIS	DIS	DIS
PENNSYLVANIA	7	14.3	3,876	22.0	562.0	5.7
RHODE ISLAND	0	0.0	0	0.0	0.0	0.0
SOUTH CAROLINA	0	0.0	0	0.0	0.0	0.0
SOUTH DAKOTA	0	0.0	0	0.0	0.0	0.0
TENNESSEE	12	25.0	3,503	21.9	349.5	10.8
TEXAS	41	12.2	20,932	13.2	551.0	9.0
UTAH	DIS	DIS	DIS	DIS	DIS	DIS
VERMONT	0	0.0	0	0.0	0.0	0.0

9.31 1989 LAW ENFORCEMENT ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY STATE OF BASED ROTORCRAFT

PAGE 3 OF 3

STATE	ESTIMATE OF NUMBER LAW ENFORCEMENT	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
VIRGINIA	15	20.0	6,325	15.9	427.5	7.4
WASHINGTON	7	42.9	1,925	47.3	261.3	37.9
WEST VIRGINIA	DIS	DIS	DIS	DIS	DIS	DIS
WISCONSIN	0	0.0	0	0.0	0.0	0.0
WYOMING	0	0.0	0	0.0	0.0	0.0
PUERTO RICO	0	0.0	0	0.0	0.0	0.0
TOTAL	615	3.1	330,710	14.8	545.8	2.3

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

LAW ENFORCEMENT ROTORCRAFT ARE ONES THAT WERE USED IN LAW ENFORCEMENT ACTIVITIES 90% OR MORE DURING THE YEAR.

9.32 1989 LAW ENFORCEMENT ROTORCRAFT,  
NUMBER OF ROTORCRAFT BY  
EXPANDED USE CATEGORY BY ROTORCRAFT TYPE

PAGE 1 OF 1

ROTORCRAFT TYPE	TOTAL LAW ENFORCMT	PER- SONAL	EMERG FAR135	MED FAR135	SVCE UND	AIR TAXI	COMMUTR CARRIER	CORP- ORATE	INSTRUC TIONAL	AERIAL APPL	EXTNL OBS	OTHR LOAD	WK USE	BUSI- NESS	OTHER
MANUFACTURER BUILT:															
PISTON TOTAL:															
EST. NO. LAW ENFORCMT	216	0	DIS	0	0	0	0	DIS	21	13	167	0	0	0	10
& STD. ERROR	5.2	0.0		0.0	0.0	0.0	0.0		17.8	21.6	3.0	0.0	0.0	0.0	20.9
EST. & LAW ENFORCMT	5.5														
TURBINE: SINGLE ENGINE															
EST. NO. LAW ENFORCMT	367	0	0	37	DIS	0	0	DIS	32	DIS	DIS	DIS	DIS	DIS	16
& STD. ERROR	3.9	0.0	0.0	15.8		0.0	0.0		19.4						16.6
EST. & LAW ENFORCMT	10.2														
TURBINE: MULTI - ENGINE															
EST. NO. LAW ENFORCMT	31	0	0	17	DIS	0	0	DIS	0	DIS	DIS	DIS	DIS	DIS	0
& STD. ERROR	15.5	0.0	0.0	7.0		0.0	0.0		0.0				0.0		0.0
EST. & LAW ENFORCMT	2.9														
TURBINE TOTAL:															
EST. NO. LAW ENFORCMT	398	0	0	54	DIS	0	0	DIS	32	11	254	7	DIS	DIS	16
& STD. ERROR	3.8	0.0	0.0	11.0		0.0	0.0		19.4	26.5	2.4	19.4			16.6
EST. & LAW ENFORCMT	8.5														
MANUFACTURER BUILT TOTAL:															
EST. NO. LAW ENFORCMT	615	0	DIS	54	DIS	0	0	DIS	54	24	421	7	DIS	DIS	26
& STD. ERROR	3.1	0.0		11.0		0.0	0.0	14.6	13.7	16.9	1.9	19.4			13.0
EST. & LAW ENFORCMT	7.1														
AMATEUR BUILT:															
EST. NO. LAW ENFORCMT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
& STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EST. & LAW ENFORCMT	0.0														
TOTAL															
EST. NO. LAW ENFORCMT	615	0	DIS	54	DIS	0	0	DIS	54	24	421	7	DIS	DIS	26
& STD. ERROR	3.1	0.0		11.0		0.0	0.0	14.6	13.7	16.9	1.9	19.4			13.0
EST. & LAW ENFORCMT	5.9														

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.  
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.  
"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

LAW ENFORCEMENT ROTORCRAFT ARE ONES THAT WERE USED IN LAW ENFORCEMENT ACTIVITIES 90% OR MORE DURING THE YEAR.

9.33 1989 LAW ENFORCEMENT ROTORCRAFT  
FLIGHT HOURS BY  
EXPANDED USE CATEGORY BY ROTORCRAFT TYPE

PAGE 1 OF 1

PRIMARY USE

ROTORCRAFT TYPE	PER- SONAL	EMERG MED SVCE		AIR TAXI	COMMUTER CARRIER	CORP- ORATE	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	EXTRNL LOAD	OTHR USE	BUSI- NESS	OTHER	TOTAL
		UNDER FAR 135	NOT UND FAR 135											
MANUFACTURER BUILT:														
PISTON TOTAL:														
EST. TOT. HOURS	0	DIS	0	0	0	DIS	3,446	7,940	79,846	0	0	0	5,196	99,875
% STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0	24.5	21.6	6.1	0.0	0.0	0.0	23.9	7.9
TURBINE: SINGLE ENGINE														
EST. TOT. HOURS	0	0	19,953	DIS	0	DIS	7,170	DIS	DIS	DIS	DIS	DIS	7,437	221,765
% STD. ERROR	0.0	0.0	16.6	0.0	0.0	0.0	21.7	0.0	0.0	0.0	0.0	0.0	18.1	4.6
TURBINE: MULTI - ENGINE														
EST. TOT. HOURS	0	0	4,152	0	0	DIS	0	DIS	DIS	DIS	0	DIS	0	9,680
% STD. ERROR	0.0	0.0	12.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.3
TURBINE TOTAL:														
EST. TOT. HOURS	0	0	24,105	DIS	0	DIS	7,170	5,964	172,597	4,730	DIS	DIS	7,437	231,444
% STD. ERROR	0.0	0.0	11.9	0.0	0.0	0.0	21.7	32.6	3.9	37.1	0.0	0.0	18.1	4.5
MANUFACTURER BUILT TOTAL:														
EST. TOT. HOURS	0	DIS	24,105	DIS	0	5,627	10,616	13,904	252,443	4,730	DIS	DIS	12,633	331,319
% STD. ERROR	0.0	0.0	11.9	0.0	0.0	15.4	16.1	18.9	3.3	37.1	0.0	0.0	14.4	4.0
AMATEUR BUILT:														
EST. TOT. HOURS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL														
EST. TOT. HOURS	0	DIS	24,105	DIS	0	5,627	10,616	13,904	252,443	4,730	DIS	DIS	12,633	331,319
% STD. ERROR	0.0	0.0	11.9	0.0	0.0	15.4	16.1	18.9	3.3	37.1	0.0	0.0	14.1	4.0

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.  
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

LAW ENFORCEMENT ROTORCRAFT ARE ONES THAT WERE USED IN LAW ENFORCEMENT ACTIVITIES 90% OR MORE DURING THE YEAR.

## 7. PUBLIC USE ROTORCRAFT

Some of the rotorcraft in the rotorcraft fleet are used by local, state and Federal government agencies on behalf of their citizens for public use activities. These activities include survey work, aerial observation, and aerial application--to name a few. For the purpose of this section, a public use rotorcraft is one that was used for public use 90 percent of the time or more during the year. This section presents the number of rotorcraft used in public use activities, the total flight hours, and the primary use of public use rotorcraft.

This section presents six tables and three figures. Tables 9.34-9.37 present the estimated number of public use rotorcraft, total flight hours and average flight hours in four different ways, by: 1) aircraft type; 2) region of based rotorcraft; 3) SDR Rotorcraft Manufacturer/Model Group; and 4) state of based rotorcraft. Tables 9.38 and 9.39 present the number of public use rotorcraft and total flight hours by expanded use category. Definitions of expanded use categories are listed in Appendix F.

Figure 9.13 shows the number of public use rotorcraft as a percent of all active rotorcraft. Figure 9.14 displays public use rotorcraft total flight hours by rotorcraft type. Figure 9.15 displays two graphs--the first one shows the number of public use rotorcraft in each expanded use category; the second graph depicts the total hours flown by public use rotorcraft in each expanded use category.

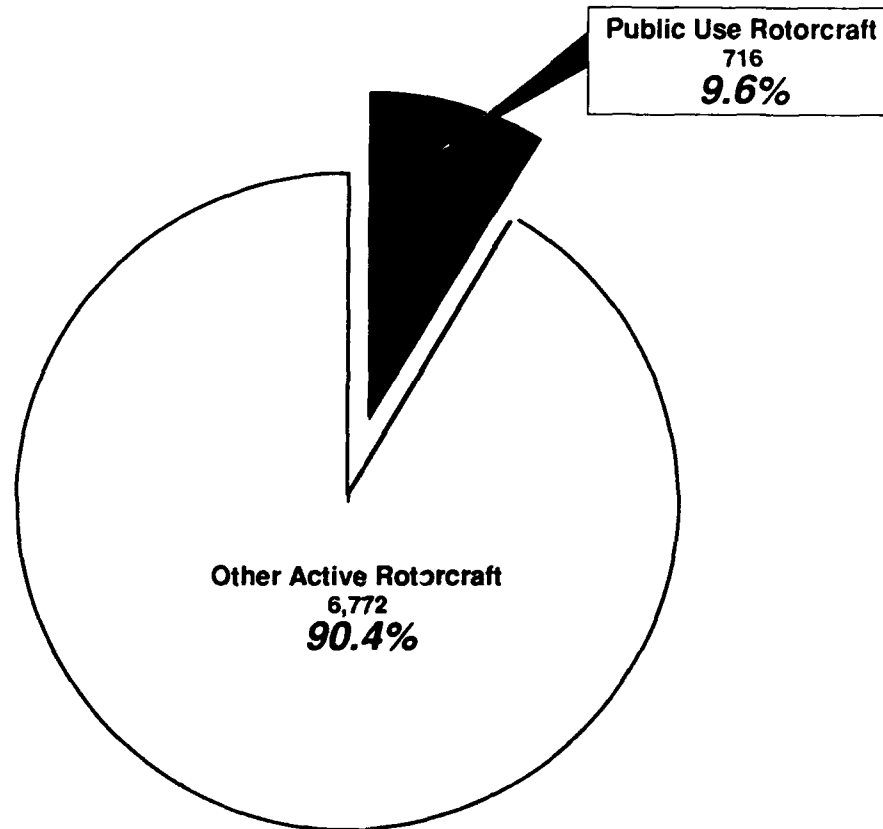
Some key observations to be drawn from Tables 9.34-9.39 and the figures in this section include:

- o Approximately 716 out of 7,488 active rotorcraft are used for public use purposes.
- o Public use rotorcraft comprise 9.6 percent of the active rotorcraft fleet.
- o Public use rotorcraft flew more than 293,000 hours, 10.4 percent of the total hours flown by rotorcraft in 1989.
- o Overall, public use rotorcraft averaged 417 flight hours with single engine turbine rotorcraft experiencing 466 average flight hours.
- o As with law enforcement rotorcraft, single engine turbine rotorcraft are also the most frequently used public use rotorcraft type, comprising 60 percent of the public use rotorcraft.
- o Aerial observation is the most frequent primary use of public use rotorcraft, with 50 percent of the public use rotorcraft primarily used for this purpose. The aerial observation use category also accounted for the most total flight hours, almost 188,000 hours or 64 percent of the total hours flown by public use rotorcraft.



- o The second and third highest use categories are aerial application with 21,990 flight hours and emergency medical service not under FAR 135, with 20,507 flight hours.
- o The three regions with the greatest number of public use rotorcraft are: Western-Pacific with 220; Southern with 158; and Eastern with 96 rotorcraft.
- o The three states with the greatest number of public use rotorcraft are: California with 155; Florida with 86; and Texas with 40.
- o The state of California alone accounted for 30 percent of the total public use flight hours in 1989.

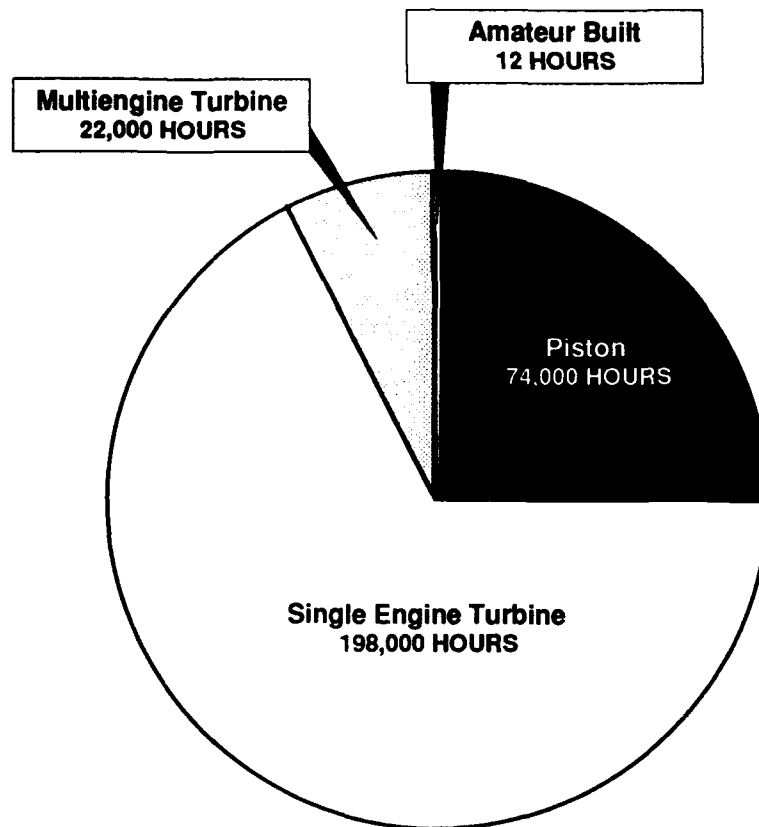
**Figure 9.13**  
**1989 PUBLIC USE ROTORCRAFT**



**Total Active Rotorcraft: 7,488 = 100%**

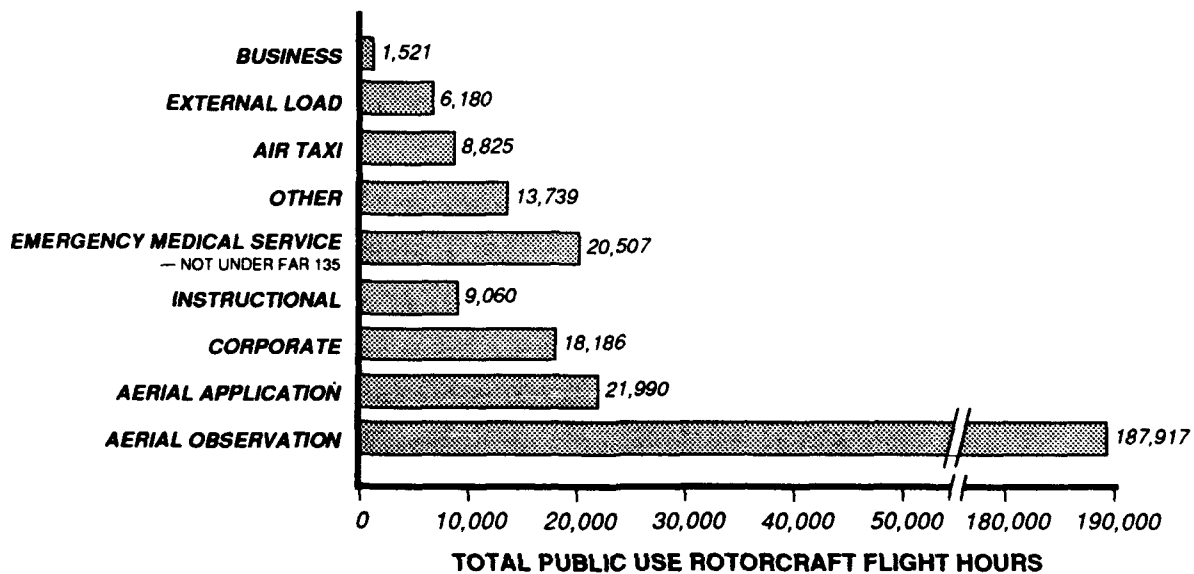
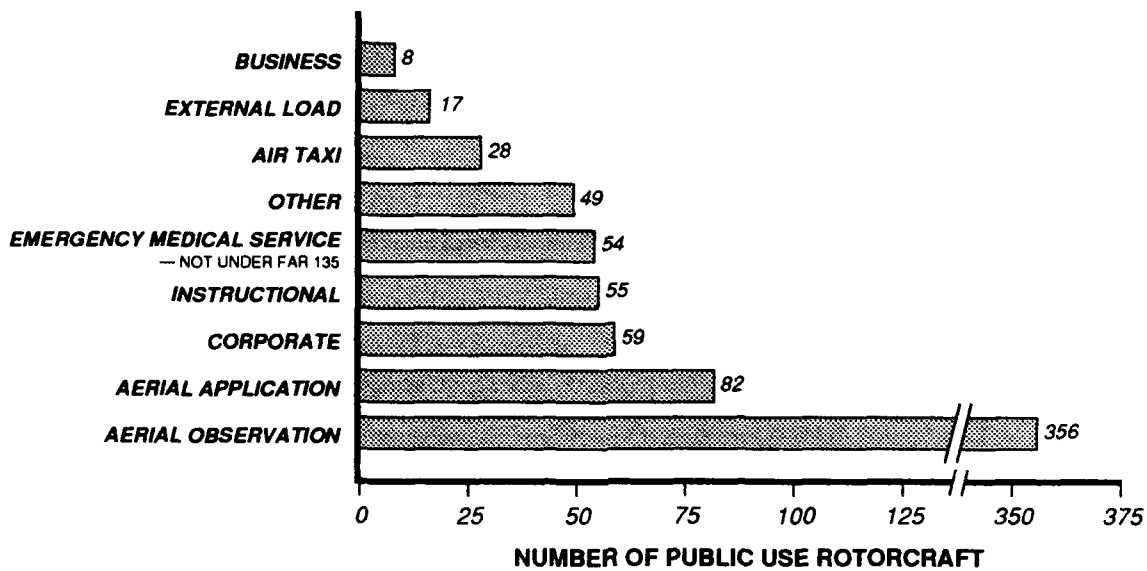
**SOURCE: Table 9.34**

**Figure 9.14**  
**1989 PUBLIC USE ROTORCRAFT**  
**TOTAL FLIGHT HOURS**  
**BY ROTORCRAFT TYPE**



**SOURCE: Table 9.34**

**Figure 9.15**  
**1989 NUMBER OF PUBLIC USE**  
**ROTORCRAFT AND TOTAL FLIGHT HOURS**  
**BY SELECTED PRIMARY USE CATEGORIES**



**SOURCE:** Tables 9.38 and 9.39

9.34 1989 PUBLIC USE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY ROTORCRAFT TYPE

PAGE 1 OF 1

ROTORCRAFT TYPE	ESTIMATE OF NUMBER PUBLIC USE	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
MANUFACTURER BUILT:						
PISTON TOTAL:	225	5.8	73,612	7.9	326.0	4.5
TURBINE: SINGLE ENGINE	431	3.7	198,141	4.9	466.1	3.2
TURBINE: MULTI - ENGINE	58	13.8	22,051	14.7	378.8	4.5
TURBINE TOTAL:	489	3.7	220,193	4.6	457.8	2.9
MANUFACTURER BUILT TOTAL:	714	3.1	293,805	4.0	418.4	2.5
AMATEUR BUILT:	2	100.0	12	66.4	5.0	0.0
TOTAL - ALL ROTORCRAFT:	716	3.1	293,817	4.0	417.0	2.5

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

PUBLIC USE ROTORCRAFT ARE ONES THAT WERE USED IN PUBLIC USE ACTIVITIES 90% OR MORE DURING THE YEAR.

9.35 1989 PUBLIC USE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PAGE 1 OF 3

MANUFACTURER/ MODEL GROUP	ESTIMATE OF NUMBER PUBLIC USE	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
OTHER 1 (*)	DIS	DIS	DIS	DIS	DIS	DIS
OTHER 2 (*)	24	17.3	12,836	21.3	537.1	12.5
OTHER 3 (*)	6	29.8	2,549	29.9	410.6	2.4
OTHER 4 (*)	DIS	DIS	DIS	DIS	DIS	DIS
AERORSJ2	0	0.0	0	0.0	0.0	0.0
AEROSPAS355	DIS	DIS	DIS	DIS	DIS	DIS
AEROSPSA316	DIS	DIS	DIS	DIS	DIS	DIS
AGUSTA205	12	18.9	4,618	21.8	386.8	10.9
AGUSTAA109	0	0.0	0	0.0	0.0	0.0
AIRSPC18	0	0.0	0	0.0	0.0	0.0
ARCNEH37	0	0.0	0	0.0	0.0	0.0
BELL 204	7	19.7	1,631	23.5	233.1	12.8
BELL 206	170	4.3	86,153	5.3	505.7	3.1
BELL 212	12	27.9	5,193	31.9	443.9	15.4
BELL 222	11	15.0	3,397	18.4	308.0	10.8
BELL 412	5	36.3	1,746	36.7	353.0	4.9
BELL 47	58	12.8	9,784	17.6	167.4	12.2
BOLKMS105	7	61.2	2,028	61.4	286.4	5.1
BOLKMS117	6	72.4	2,797	73.5	465.5	13.0
ENSTRMF28	12	24.7	11,199	27.7	834.5	12.9
H23/HTE	0	0.0	0	0.0	0.0	0.0

9.35 1989 PUBLIC USE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PAGE 2 OF 3

MANUFACTURER/ MODEL GROUP	ESTIMATE OF NUMBER PUBLIC USE	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
H34/55	DIS	DIS	DIS	DIS	DIS	DIS
HILLERFH1100	DIS	DIS	DIS	DIS	DIS	DIS
HILLERUH12	27	17.6	3,152	21.9	116.3	11.8
HUGHES269	75	8.7	39,390	11.4	524.0	7.4
HUGHES369	95	7.5	66,407	11.1	701.8	7.8
HYNES B2	0	0.0	0	0.0	0.0	0.0
MACDOUG369	7	19.3	2,463	22.9	363.3	12.3
MILITARY204	73	13.0	7,604	20.9	104.5	16.3
MILITARY47	30	17.0	3,727	22.0	121.0	11.9
MODEFD47	0	0.0	0	0.0	0.0	0.0
ORLHELH19	0	0.0	0	0.0	0.0	0.0
ORLHELH58	0	0.0	0	0.0	0.0	0.0
ROBSINR22	DIS	DIS	DIS	DIS	DIS	DIS
SCHWZH269	11	11.4	4,946	15.0	441.3	9.7
SKRSKYS55	0	0.0	0	0.0	0.0	0.0
SKRSKYS58	0	0.0	0	0.0	0.0	0.0
SKRSKYS58T	DIS	DIS	DIS	DIS	DIS	DIS
SKRSKYS61	0	0.0	0	0.0	0.0	0.0
SKRSKYS76	7	22.1	2,433	22.7	350.0	5.4
SNIAS 350	22	13.9	10,730	15.6	477.2	7.0
SNIAS SA318	0	0.0	0	0.0	0.0	0.0

9.35 1989 PUBLIC USE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PAGE 3 OF 3

MANUFACTURER/ MODEL GROUP	ESTIMATE OF NUMBER PUBLIC USE	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
SNIAS SA341	0	0.0	0	0.0	0.0	0.0
TH55	20	8.1	2,516	13.3	124.5	10.6
TOMCAT	0	0.0	0	0.0	0.0	0.0
TOTAL	716	3.1	293,817	4.0	417.0	2.5

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

(\*) THE "OTHER" CATEGORIES REPRESENT:

OTHER 1 - MANUFACTURER BUILT - PISTON  
OTHER 2 - MANUFACTURER BUILT - TURBINE-SINGLE ENGINE  
OTHER 3 - MANUFACTURER BUILT - TURBINE-MULTI ENGINE  
OTHER 4 - AMATEUR BUILT

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

PUBLIC USE ROTORCRAFT ARE ONES THAT WERE USED IN PUBLIC USE ACTIVITIES 90% OR MORE DURING THE YEAR.



9.36 1989 PUBLIC USE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY REGION OF BASED ROTORCRAFT

PAGE 1 OF 1

REGION	ESTIMATE OF NUMBER PUBLIC USE	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
ALASKAN	18	22.2	5,706	20.4	377.7	6.2
CENTRAL	20	15.0	11,291	22.3	544.6	13.7
EASTERN	96	8.3	28,791	8.0	309.3	9.7
GREAT LAKES	65	9.2	16,982	12.8	284.3	8.3
NEW ENGLAND	15	13.3	5,054	20.2	424.4	13.2
NORTHWEST MT.	71	11.3	16,301	10.8	245.7	8.2
SOUTHERN	158	6.3	46,143	6.7	308.3	5.1
SOUTHWESTERN	54	9.3	23,183	10.6	477.0	7.2
WESTERN-PACIFIC	220	4.5	130,669	6.1	627.5	5.2
TOTAL	716	3.1	293,778	3.4	419.9	2.5

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

PUBLIC USE ROTORCRAFT ARE ONES THAT WERE USED IN PUBLIC USE ACTIVITIES 90% OR MORE DURING THE YEAR.

9.37 1989 PUBLIC USE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY STATE OF BASED ROTORCRAFT

PAGE 1 OF 3

STATE	ESTIMATE OF NUMBER PUBLIC USE	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
ALABAMA	8	25.0	1,664	26.6	211.4	14.2
ALASKA	18	22.2	5,706	20.4	377.7	6.2
ARIZONA	34	14.7	19,689	13.4	575.3	6.9
ARKANSAS	DIS	DIS	DIS	DIS	DIS	DIS
CALIFORNIA	155	5.8	84,577	5.7	580.0	5.1
COLORADO	8	37.5	1,807	28.7	218.5	19.3
CONNECTICUT	DIS	DIS	DIS	DIS	DIS	DIS
DELAWARE	DIS	DIS	DIS	DIS	DIS	DIS
DIST. OF COLUMBIA	19	31.6	1,804	48.8	102.1	43.8
FLORIDA	86	9.3	30,352	8.5	349.4	7.5
GEORGIA	16	18.8	4,338	20.7	280.9	9.8
HAWAII	5	40.0	4,831	54.6	63.7	35.1
IDAHO	DIS	DIS	DIS	DIS	DIS	DIS
ILLINOIS	11	18.2	3,516	19.4	346.8	10.8
INDIANA	5	40.0	772	51.8	168.8	22.5
IOWA	8	25.0	4,318	30.3	556.3	11.5
KANSAS	7	28.6	5,690	37.0	853.7	26.4
KENTUCKY	DIS	DIS	DIS	DIS	DIS	DIS
LOUISIANA	5	20.0	2,062	25.4	395.0	3.3
MAINE	0	0.0	0	0.0	0.0	0.0
MARYLAND	8	25.0	3,658	22.7	490.6	12.3
MASSACHUSETTS	9	22.2	4,614	21.8	498.5	12.6
MICHIGAN	21	19.0	7,243	21.5	365.6	13.0

9.37 1989 PUBLIC USE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY STATE OF BASED ROTORCRAFT

PAGE 2 OF 3

STATE	ESTIMATE OF NUMBER PUBLIC USE	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
MINNESOTA	7	28.6	1,187	25.9	170.0	17.3
MISSISSIPPI	12	25.0	2,121	22.5	173.0	10.3
MISSOURI	5	40.0	1,283	34.6	248.1	17.2
MONTANA	19	26.3	2,640	25.9	163.0	12.2
NEBRASKA	0	0.0	0	0.0	0.0	0.0
NEVADA	26	15.4	21,572	23.6	881.8	25.1
NEW HAMPSHIRE	0	0.0	0	0.0	0.0	0.0
NEW JERSEY	27	11.1	6,919	11.9	257.1	7.0
NEW MEXICO	DIS	DIS	DIS	DIS	DIS	DIS
NEW YORK	21	14.3	7,007	15.3	355.4	10.3
NORTH CAROLINA	6	50.0	1,643	33.9	267.5	24.9
NORTH DAKOTA	DIS	DIS	DIS	DIS	DIS	DIS
OHIO	16	18.8	3,262	37.3	231.2	27.4
OKLAHOMA	5	40.0	3,236	30.7	640.0	2.4
OREGON	18	22.2	5,237	18.4	325.7	9.9
PENNSYLVANIA	DIS	DIS	DIS	DIS	DIS	DIS
RHODE ISLAND	DIS	DIS	DIS	DIS	DIS	DIS
SOUTH CAROLINA	14	14.3	1,161	37.4	140.5	30.0
SOUTH DAKOTA	DIS	DIS	DIS	DIS	DIS	DIS
TENNESSEE	12	25.0	3,568	22.0	349.5	10.8
TEXAS	40	12.5	17,507	12.5	470.8	9.7
UTAH	8	37.5	1,448	39.3	208.4	19.9
VERMONT	0	0.0	0	0.0	0.0	0.0

9.37 1989 PUBLIC USE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS  
BY STATE OF BASED ROTORCRAFT

PAGE 3 OF 3

STATE	ESTIMATE OF NUMBER PUBLIC USE	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
VIRGINIA	15	26.7	5,593	20.3	385.3	10.6
WASHINGTON	15	26.7	4,109	24.9	267.4	18.1
WEST VIRGINIA	DIS	DIS	DIS	DIS	DIS	DIS
WISCONSIN	DIS	DIS	DIS	DIS	DIS	DIS
WYOMING	0	0.0	0	0.0	0.0	0.0
PUERTO RICO	0	0.0	0	0.0	0.0	0.0
TOTAL	716	3.1	284,123	16.6	417.0	2.5

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

"Dis" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

PUBLIC USE ROTORCRAFT ARE ONES THAT WERE USED IN PUBLIC USE ACTIVITIES 90% OR MORE DURING THE YEAR.

9.38 1989 PUBLIC USE ROTORCRAFT,  
NUMBER OF ROTORCRAFT BY  
EXPANDED USE CATEGORY BY ROTORCRAFT TYPE

PAGE 1 OF 1

ROTORCRAFT TYPE	TOTAL LAW ENFORCMT	PER- SONAL	EMERG UNDER FAR135	MED SVCE NOT UND FAR135	AIR TAXI	COMMUTR CARRIER	CORP- ORATE	INSTRUC TIONAL	AERIAL APPL	EXTNL LOAD	OTHR USE	WK BUSI- NESS	OTHER
MANUFACTURER BUILT:													
PISTON TOTAL:													
EST. NO. PUBLIC USE	225	0	DIS	0	15	0	DIS	28	38	121	0	DIS	0
% STD. ERROR	5.6	0.0		0.0	25.6	0.0		15.1	13.3	5.1	0.0		17
EST. % PUBLIC USE	5.7												20.0
TURBINE: SINGLE ENGINE													
EST. NO. PUBLIC USE	431	0	DIS	38	8	0	DIS	27	DIS	223	DIS	DIS	DIS
% STD. ERROR	3.7	0.0		14.0	22.0	0.0		23.5		3.3			
EST. % PUBLIC USE	12.0												
TURBINE: MULTI - ENGINE													
EST. NO. PUBLIC USE	58	0	0	16	6	0	DIS	0	DIS	12	DIS	DIS	DIS
% STD. ERROR	13.5	0.0	0.0	13.4	31.2	0.0		0.0		20.6			
EST. % PUBLIC USE	5.4												
TURBINE TOTAL:													
EST. NO. PUBLIC USE	489	0	DIS	54	14	0	DIS	27	44	235	17	DIS	8
% STD. ERROR	3.7	0.0		10.6	18.5	0.0		23.5	14.5	3.3	22.7		38.7
EST. % PUBLIC USE	10.5												
MANUFACTURER BUILT TOTAL:													
EST. NO. PUBLIC USE	714	0	DIS	54	28	0	DIS	55	82	356	17	DIS	8
% STD. ERROR	3.1	0.0		10.6	16.0	0.0		13.8	9.9	2.8	22.7		38.7
EST. % PUBLIC USE	8.3												
AMATEUR BUILT:													
EST. NO. PUBLIC USE	DIS	0	0	0	0	0	0	0	0	0	0	DIS	0
% STD. ERROR		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
EST. % PUBLIC USE	DIS												
TOTAL													
EST. NO. PUBLIC USE	716	0	DIS	54	28	0	DIS	55	82	356	17	DIS	8
% STD. ERROR	3.1	0.0		10.6	16.0	0.0		13.8	9.9	2.8	22.7		38.7
EST. % PUBLIC USE	6.9												49

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.  
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

PUBLIC USE ROTORCRAFT ARE ONES THAT WERE USED FOR PUBLIC USE ACTIVITIES 90% OR MORE DURING THE YEAR.

9.39 1989 PUBLIC USE ROTORCRAFT  
FLIGHT HOURS BY  
EXPANDED USE CATEGORY BY ROTORCRAFT TYPE

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PRIMARY USE

ROTORCRAFT TYPE		EMERG MED SVCE													TOTAL	
PER-SONAL		UNDER FAR 135	NOT UND FAR 135	AIR TAXI	COMPUTER CARRIER	CORP-ORATE	INSTRUC-TIONAL	AERIAL APPL	AERIAL OBS	EXTRNL LOAD	OTHR WK USE	BUSI-NESS	OTHER	TOTAL		
MANUFACTURER BUILT:																
PISTON TOTAL:																
EST. TOT. HOURS	0	DIS	0	3,874	0	DIS	4,568	10,995	45,816	0	DIS	0	5,490	73,612		
% STD. ERROR	0.0	0.0	0.0	29.0	0.0	0.0	21.6	13.7	8.1	0.0	0.0	0.0	21.7	8.2		
TURBINE: SINGLE ENGINE																
EST. TOT. HOURS	0	DIS	15,305	2,696	0	DIS	4,492	DIS	137,988	DIS	DIS	DIS	DIS	198,141		
% STD. ERROR	0.0	0.0	15.2	22.7	0.0	0.0	25.4		5.1					4.8		
TURBINE: MULTI - ENGINE																
EST. TOT. HOURS	0	0	5,203	2,255	0	DIS	0	DIS	4,113	DIS	DIS	DIS	DIS	22,051		
% STD. ERROR	0.0	0.0	18.2	31.7	0.0	0.0	0.0		21.0					15.8		
TURBINE TOTAL:																
EST. TOT. HOURS	0	DIS	20,507	4,951	0	DIS	4,492	10,995	142,101	6,180	DIS	1,521	DIS	220,193		
% STD. ERROR	0.0	0.0	12.1	18.8	0.0	0.0	25.4	17.7	5.1	27.3		48.5		4.6		
MANUFACTURER BUILT TOTAL:																
EST. TOT. HOURS	0	DIS	20,507	8,825	0	18,186	9,060	21,990	187,917	6,180	DIS	1,521	DIS	293,805		
% STD. ERROR	0.0	0.0	12.1	17.2	0.0	11.1	16.6	11.3	4.3	27.3		48.5		4.0		
AMATEUR BUILT:																
EST. TOT. HOURS	0	0	0	0	0	0	0	0	0	0	DIS	0	DIS	DIS		
% STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0				
TOTAL																
EST. TOT. HOURS	0	DIS	20,507	8,825	0	18,186	9,060	21,990	187,917	6,180	DIS	1,521	13,739	293,817		
% STD. ERROR	0.0	0.0	12.1	17.2	0.0	11.1	16.6	11.3	4.3	27.3		48.5	12.5	4.0		

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.  
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

PUBLIC USE ROTORCRAFT ARE ONES THAT WERE USED FOR PUBLIC USE ACTIVITIES 90% OR MORE DURING THE YEAR.

## APPENDIX A

### METHODOLOGY FOR THE 1989 GENERAL AVIATION ACTIVITY AND AVIONICS SURVEY

#### 1. OVERVIEW

##### 1.1 Purpose of Survey

The purpose of the General Aviation Activity and Avionics (GAAA) Survey is to provide the Federal Aviation Administration (FAA) with information on the activity and avionics of the general aviation fleet. The information obtained from the survey enables the FAA to monitor the general aviation fleet so that it can, among other activities, anticipate and meet demand for National Airspace System (NAS) facilities and services, assess the impact of regulatory changes on the general aviation fleet, and implement measures to assure the safe operation in the airspace of all aircraft.

##### 1.2 Background

Prior to the current survey method, the FAA used the Aircraft Registration Eligibility, Identification, and Activity Report, AC Form 8050-73, in its data collection program on general aviation activity and avionics. The form was sent annually to all owners of civil aircraft in the U.S., and served two purposes: (1) Part 1 was the mandatory aircraft registration revalidation form, and (2) Part 2 was voluntary and applied to general aviation aircraft only, asking questions on the owner-discretionary characteristics of the aircraft such as flight hours, avionics equipment, base location, and use. This information was used by the FAA to estimate aircraft activity.

In 1978, the FAA replaced AC Form 8050-73 with a new system: Part 1 was replaced by a triennial registration program; and Part 2 was replaced by the General Aviation Activity and Avionics Survey, FAA Form 1800-54, shown in Figure A.1. The GAAA Survey was to be conducted annually, based on a statistically selected sample of general aviation aircraft, requesting the same type of information as Part 2 of AC Form 8050-73. The first survey took place in 1978, collecting data on the 1977 general aviation fleet. The 1989 statistics in this report were derived from the thirteenth survey, which took place in 1990. Benefits resulting from the new system of data collection include quicker processing of the results, improved data quality, and a considerable savings in time and money to both the public and the Federal Government.

Form Approved OMB NO. 2120-0080

FAA Form 1800-54 (1-00)



## 2. SURVEY COVERAGE

### 2.1 Aircraft

The General Aviation Activity and Avionics Survey (GAAA) covers, through a stratified probability sample, all general aviation aircraft registered in the United States. The term, "general aviation," as used in this survey, is defined as all aircraft in the U.S. civil air fleet except those operated under Federal Aviation Regulations (FAR) Parts 121 and 127. FAR Part 121, as modified by Special Federal Aviation Regulation 38 (SFAR-38), governs air carriers carrying passengers and cargo for hire and conducting scheduled and charter operations with aircraft having a seating capacity of more than 30 seats and/or a payload capacity of more than 7,500 pounds. Thus, general aviation includes aircraft operated under:

- Part 91: General operating and flight rules.
- Part 125: Certification and operations: Airplanes having a seating capacity of 20 or more passengers or a maximum payload capacity of 6,000 pounds or more (but not for hire).
- Part 133: Rotorcraft external load operations.
- Part 135: Air taxi operators and commercial operators.
- Part 137: Agricultural aircraft operations.

Since the term "general aviation" is not always defined in the same way from aviation publication to aviation publication, it is often a source of confusion to users of general aviation statistics. The point on which the various definitions disagree is under what categorization (air carrier or general aviation) to place air taxis and commuter air carriers operating under FAR Part 135. The GAAA Survey has always used the above definition for general aviation, which includes the air taxis, commuter air carriers and air travel clubs. Thus, it is essential for the user to understand thoroughly the definition of general aviation as it applies to the sources he or she is using so that proper comparisons of data can be made.

Certain aircraft meeting the general aviation criteria, though, have been excluded from the survey. This group consists of aircraft registered to dealers, aircraft in the process of being sold or with registration pending, and aircraft for which not enough information was available to categorize them properly for sampling purposes.

General aviation offers such varied services as air taxi, aircargo, industrial, agricultural, business, personal, recreational, instructional, research, patrol, and sport flying. General aviation aircraft range in complexity from simple gliders and balloons to four engine turbojets.

## 2.2 Geographic

The sample survey conducted by the FAA covers general aviation aircraft registered with the United States Aircraft Registry as of December 31, 1989. Over 99 percent of these aircraft are registered to owners living in the 50 states; Washington, D.C.; Puerto Rico; and other U.S. territories.<sup>1</sup>

## 2.3 Content

The survey questionnaire, FAA Form 1800-54 shown previously in Figure A.1, requests the aircraft owner to provide the following information on the sampled aircraft's characteristics and uses for various periods:

- 1) hours by use, IFR hours, percentage of hours flown in Instrument Meteorological Conditions (IMC) and Visual Meteorological Conditions (VMC) during the day and evening, fuel consumption grade and cost, and number of local and cross country landings for the entire calendar year, 1989;
- 2) airframe hour reading and the aircraft's base location as of December 31, 1989; and
- 3) avionics equipment currently on board.

## 3. SURVEY METHOD

The survey data were collected by mailing the questionnaire to the owners of the sampled aircraft in three mailings. The first mailing in February 1990 covered all 29,726 aircraft in the sample and had a response rate of 50.3 percent as shown in Table A.1. This accounted for approximately 73 percent of the total responses to the survey. The second mailing conducted in April included only those aircraft in the sample that had not yet responded. The second mailing had a response rate of 29.4 percent which accounted for approximately 21 percent of the total responses to the survey. The third mailing conducted in May 1990 was sent to the owners of the sampled aircraft who had not responded to the first or second mailings as of a specified date. The third mailing produced a response rate of 13.9 percent, or 7 percent of the total responses to the survey. The valid survey responses resulted in an overall a response rate of 65.0 percent.

TABLE A.1 SUMMARY OF RESPONSE INFORMATION

PHASE	VALID SAMPLE SIZE	# RESPONSES	RESPONSE RATE	%TOTAL RESPONSE
1st Mailing	29,726	15,702	52.8	81.2
2nd Mailing	14,374	2,883	20.0	14.9
3rd Mailing	9,870	745	7.5	3.9
TOTAL:	29,726	19,330	65.0	100.0

<sup>1</sup>Source: FAA Aircraft Registration Master File as of December 31, 1989.

Each of the three mailings was accompanied by a cover letter, shown respectively in Figures A.2, A.3, and A.4 at the back of this Appendix.

#### 4. SAMPLE DESIGN

##### 4.1 Sample Frame and Size

The FAA Mike Monroney Aeronautical Center in Oklahoma City maintains the Aircraft Registration Master File, which is the official record of registered civil aircraft in the United States. The sample frame, the list of aircraft from which the sample was selected, was provided by this organization based upon criteria specified by AMS-420.

Several changes which occurred between the 1977 and 1978 survey cycles impacted the population, frame and, ultimately, the survey results. In January 1978, the FAA implemented a new procedure, known as triennial revalidation, for maintaining its master file. Instead of requiring all aircraft owners to revalidate and update their aircraft registration annually, FAA only required revalidation for those aircraft owners who had not contacted the FAA registry for three years. This less frequent updating of the master file affected its accuracy and representativeness. Two major consequences for the survey results are discussed below.

- 1) The accuracy of owners' addresses has deteriorated. The percentage of questionnaires returned by the post office has ranged from 8 to 13 percent since 1987. Postal returns for 1989 were 11 percent, up 3 percent over 1988's returns, but down 2 percent from 1987. Prior to the implementation of the 1978 FAA procedures, the postal return rate averaged 2 percent. From 1977 to 1982, following the implementation of the 1978 FAA procedures, the post office returns more than tripled from 2 percent to 6.8 percent. The high post office return rate partially explains the lower survey response rates experienced since 1977.

- 2) The master file contained a residue of aircraft which, under the old revalidation system, would have been deregistered and purged from the file but now remain under the new system. Consequently, the population counts were inflated resulting in artificially large increases in the estimates of the number of active general aviation aircraft from 1977 to 1978, and from 1978 to 1979.

Also during this period, the entire Aircraft Registration System was installed on a new computer system. At the same time, FAA modified many of the updating and processing procedures. It is quite possible that these changes affected the registration file.

Finally, new legislation required two formerly ineligible categories of aircraft to be registered with the U.S. Registry.

From 1977 to 1978, the definition of a registered general aviation aircraft changed to include the two new groups:

- 1) aircraft owned by individual citizens of foreign countries who are permanent residents of the United States, and
- 2) aircraft owned by non-U.S. corporations which are organized and doing business under U.S. law (as long as the aircraft are based and used primarily in the United States).

It is estimated that these aircraft comprise less than one half of one percent of the general aviation fleet.

These changes thus affected the contents of the Aircraft Registration Master File and, consequently, the GAAA Survey results. While it is difficult to quantify the effects of these changes, FAA estimates that they caused the survey results to overestimate aircraft population and hours flown by five percent or less.

The sample frame is comprised of all aircraft identified as general aviation in the master file (according to the definition in Section 2.1), with the following exceptions:

- 1) aircraft registered to dealers;
- 2) aircraft with "Sale Reported" or "Registration Pending" appearing in the record instead of the owner's name;
- 3) aircraft with a known, inaccurate owner's address; and
- 4) aircraft with missing state of registration, aircraft make-model-series code, or aircraft type information.

For calendar year 1989, the sample frame consisted of 256,722 general aviation aircraft records from which 29,726 records were sampled, yielding a 11.6 percent sample. Table A.2 shows, by aircraft type, the distribution of the sample compared to that of the population. This clearly demonstrates the disproportionality of the sample to the population, an intended result of the sample design to gain efficiency and to control errors.

#### 4.2 Description of Sample Design

The sample design employed was a stratified, systematic design from a random start. The sample was selected from a two-way stratified frame matrix. The two stratification criteria were:

- 1) state or territory of aircraft registration, and
- 2) a variable called the make-model index, constructed from a combination of the aircraft type and the Service Difficulty Reporting (SDR) aircraft manufacturer/model group.

**TABLE A.2 SAMPLE AND POPULATION DISTRIBUTION BY AIRCRAFT TYPE**

TYPE	APPROXIMATE POPULATION	SAMPLE SIZE	SAMPLE AS % OF POPULATION
<b>Fixed Wing - Piston</b>			
1 Engine, 1-3 Seats	87,836	11,192	12.7
1 Engine, 4+ Seats	120,246	8,265	6.9
2 Engine, 1-6 Seats	17,838	2,352	13.2
2 Engine, 7+ Seats	8,690	1,873	21.6
Other Piston	194	127	65.5
<b>Fixed Wing - Turboprop</b>			
2 Engine 1-12 Seats	5,082	864	17.0
2 Engine 13+ Seats	1,442	558	38.7
Other Turboprop	352	118	33.5
<b>Fixed Wing - Turbojet</b>			
2 Engine	4,209	906	21.5
Other Turbojet	527	153	29.0
<b>Rotorcraft</b>			
Piston	5,784	5,784	100.0
Turbine	4,685	4,685	100.0
<b>Other</b>	<u>10,306</u>	<u>3,318</u>	32.2
<b>TOTAL:</b>	267,191	40,195	15.0

The 54 levels of the state criterion and the 393 levels of the make-model index yielded a matrix of 54 by 393 or 21,222 cells (strata) among which the frame was divided for sampling.

The FAA's primary requirement was for estimates of average annual flight hours per aircraft, necessitating optimal determination of sample sizes based on flight hour variation by state and by make-model index, and not on population. Hence, the sample was not proportional to size, and a sampling fraction was determined for each cell with a non-zero population. Sampling was then performed systematically from a random start within individual cells, yielding a final sample size of 29,726 general aviation aircraft (excluding rotorcraft). Since the rotorcraft survey began as a full census of all owned and operated rotorcraft, there were a total of 10,469 rotorcraft surveyed ( 5,784 piston and 4,685 turbine). From this rotorcraft "sample," 57.6 percent of the piston rotorcraft owners/operators and 68.6 percent of the turbine rotorcraft owners/operators responded. The resulting rotorcraft data then were extrapolated to the universe and published in a separate 1989 Rotorcraft Survey Report. Data on rotorcraft population, number active/inactive, and the total rotorcraft hours contained in this GAAA report were extracted from the 1989 Rotorcraft Survey Report and combined into the GAAA Survey's chapters II, III, and VI.

Initially, each aircraft in the sample was given a weight which was the inverse of its cell's sampling fraction, and which corresponded to the number of aircraft in the sample frame represented by that aircraft. When all responses to the survey were tallied, each weight was adjusted according to the response rate for the cell, counting an aircraft for which no survey questions were answered as a non-respondent, and an aircraft for which at least one question was answered as a respondent. The weight adjustment is described below:

- 1) non-respondents' weights were changed to zero; and
- 2) the weights of all responding aircraft were adjusted uniformly by dividing the initial weight by the response rate for the cell.

This method of weight adjustment has several attributes. It actually incorporates the response rates into the final weights and simplifies estimation procedures.

#### 4.3 Error

Errors associated with estimates derived from sample survey results fall into two categories: sampling and non-sampling errors.<sup>2</sup> Sampling errors occur because the estimates are based on a sample--not the entire population.

Non-sampling errors arise from a number of sources such as non-response, inability or unwillingness of respondents to provide correct information, differences in interpretation of questions, mistakes in recording or coding the data obtained, and others. The following sections discuss the two types of errors.

#### 4.4 Sampling Error

In a designed survey, the sampling error associated with an estimate is generally unknown, but a measurable quantity, known as the standard error, is often used as a guide to the magnitude of sampling error. The standard error measures the variation which would occur among the estimates from all possible samples of the same design from the same population. It measures the precision with which an estimate approximates the average result of all possible samples or the result of a survey in which all elements of the population were sampled.

Through sample design techniques, the statistician can control the sizes of standard errors on a few key variables, known as design variables, in the survey. The design variables in the GAAA Survey are the average annual hours flown per aircraft by aircraft type, by aircraft manufacturer/model characteristics, and by state of aircraft registration. The sample is designed to produce standard errors on these variables at levels specified by the FAA. No controls are placed on the standard errors of the non-design variables.

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<sup>2</sup>Standards for Discussion and Presentation of Errors in Data, U.S. Department of Commerce, Bureau of the Census, (Washington, DC, 1974), pp. 11-14.

Thus, every estimate resulting from a sample survey, whether it be for a design or non-design variable, has sampling error associated with it. The user of survey results must consider sampling error along with the point estimate itself when making inferences or drawing conclusions about the sample population. A large standard error relative to an estimate indicates lack of precision and, inversely, a small standard error indicates precision. To facilitate the comparison of estimates and their errors, the tables in this publication display standard errors for all estimated quantities. In most cases, the tables contain the percent standard error, which is the standard error multiplied by 100 and divided by the corresponding estimate. The paragraphs below explain the proper interpretation and use of the errors.

An estimate and its standard error make it possible to construct an interval estimate with the prescribed confidence that the interval will include the average value of the estimate from all possible samples of the population. Table A.3 below shows selected interval widths and their corresponding confidence.

TABLE A.3 CONFIDENCE OF INTERVAL ESTIMATES

<u>WIDTH OF INTERVAL</u>	<u>APPROXIMATE CONFIDENCE THAT INTERVAL INCLUDES AVERAGE VALUE</u>
1 Standard error	68%
2 Standard error	95%
3 Standard error	99%

For the most part, the measure of precision presented in this report is the percent standard error (% s.e.). As explained above, this statistic is merely the ratio of the standard error to the estimate times 100 (to convert the fraction to a percent). In addition to immediately communicating the relative precision of the estimate, it allows ready comparison of the survey's performance across variables. The following is an example of how to use the % s.e.: from Table 2.1, a 95 percent confidence interval for the number of active rotorcraft with piston engines would be 3,244 plus or minus 2 (1.2/100)(3,244) or the interval between 3,166 and 3,322. One would say that the number of active rotorcraft with piston engines lies somewhere between 3,166 and 3,322 with 95 percent confidence. Another way of expressing this is that we are highly confident (95 percent) that the number of active rotorcraft with piston engines is within plus or minus 2(1.2) percent, or 2.4 percent of 3,244.

#### 4.5 Non-Sampling Error

Non-sampling error can be reduced through survey design, although the amount of reduction is difficult, if not impossible, to quantify in any given design. There are, however, various techniques which can limit non-sampling error.

Several of these techniques were incorporated into the design of the GAAA Survey and are itemized below:

1) A second mailing and a prompting (reminder) letter were sent to non-respondents in addition to the original mailing in order to improve the response rate, since a low response rate is a major cause of non-sampling error. A total of 65.0 percent of the sampled aircraft responded to at least one question of the survey. Although the 1989 response rate marks a decrease from the 80 percent response rate achieved in 1977 (the first year of the survey) it does represent an increase from 1988's response rate of 55.5 percent. Possible causes for the less than 100 percent sample rate response include:

- o The deterioration of the currency of aircraft owners' addresses in the Aircraft Registration Master File, the sample frame. This caused a gradual increase in the percentage of questionnaires returned undelivered by the postmaster.

- o Repeated sampling of aircraft in two and possibly three or four successive years. Due to the design of the sample to achieve specified precision in estimates for states and manufacturer/model groups of aircraft, it is impossible to avoid sampling some of the same aircraft in consecutive years. Owners of such aircraft may have been less willing to respond in 1989 than in previous years.

Table A.4 reveals the responses by aircraft type. Last year, there were two aircraft types with a response rate less than 40 percent (the fixed wing, two engine piston aircraft with seven or more seats, and the "Other" piston group). This year, there are two aircraft types with a response rate less than 40 percent, the "Other" piston group (with 29.1 percent) and the fixed wing, two engine turboprop with 13 or more seats (with 38.9 percent).

2) The survey questionnaire was designed and pretested to minimize misinterpretation of questions by the aircraft owners.

3) To assure the owners of the confidentiality of their responses, the back side of the questionnaire cover letter informed them that:

"The FAA has determined that the information you provide in this survey is exempt from public disclosure under the Freedom of Information Act."<sup>3</sup>

4) Comprehensive editing procedures insured the accuracy of the data transcription to machine readable form and the internal consistency of responses.

5) The official and most accurate source of information available on the general aviation fleet, the FAA Aircraft Registration Master File, was used as the sampling frame.

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<sup>3</sup>See Figure A.2.



**TABLE A.4 RESPONSE RATE BY AIRCRAFT TYPE**

<b>AIRCRAFT TYPE</b>	<b>RESPONSE RATE</b>
<b>Fixed Wing - Piston</b>	
1 Engine, 1-3 Seats	63.2%
1 Engine, 4+ Seats	65.5
2 Engine, 1-6 Seats	58.0
2 Engine, 7+ Seats	40.3
Other Piston	29.1
<b>Fixed Wing - Turboprop</b>	
2 Engine 1-12 Seats	57.8
2 Engine 13+ Seats	38.9
Other Turboprop	47.5
<b>Fixed Wing - Turbojet</b>	
2 Engine	66.3
Other Turbojet	58.2
<b>Rotorcraft</b>	
Piston	57.6
Turbine	68.6
<b>Other</b>	59.1



U.S. Department  
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Figure A.2 First Cover Letter

800 Independence Ave., S.W.  
Washington, D.C. 20591

February 1990

Dear Aircraft Owner:

You are one of the 30,000 general aviation aircraft owners selected at random to participate in the 1989 General Aviation Activity and Avionics Survey.

We use the information you provide to us in a variety of ways. It helps us to determine the impact of proposed changes to some of our regulations and to pinpoint potential safety problems. The information also helps us to forecast our future work force and new facility requirements (such as runways, landing aids, etc.). These are just a few examples of the uses we make of your responses to the survey.

Enclosed is a questionnaire requesting information for calendar year 1989. *After reading the instructions and the information on the back of this letter, please answer all questions for the aircraft identified on the form.*

I urge you to complete the questionnaire and use the enclosed envelope to mail it today. Your prompt response will eliminate the need for additional followup contacts.

If you have any questions or need further assistance, please call Mr. Shung-Chai Huang at (202) 267-9943 or Ms. Patricia Beardsley at (202) 267-8032.

We thank you for your participation.

Sincerely,

Bert LaCroix  
Manager, Management Standards and Statistics Division,  
AMS-420

Enclosure

## *The 1989 General Aviation Activity and Avionics Survey*

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### **Why does the FAA collect this information?**

For the past 11 years, the FAA has conducted an annual sample survey to collect statistical information on the use and characteristics of the general aviation fleet. The information collected helps the FAA understand more about general aviation activities, assess the impact of general aviation on the National Airspace System, and determine its need for traffic facilities and services. These data are used by the Federal, state, and local governments, as well as by private industries and individuals, for safety analysis, planning, forecasting, research and development. We have made a concerted effort to minimize the number of questions we ask you, while still meeting the needs of the government and the public for aviation information.

### **Are the survey responses kept confidential?**

*Absolutely!!!* This annual information collection conforms to legal and administrative standards established by the Federal Government to assure confidential treatment of statistical information. The information you have provided in the past decade has never been published or released in any form that would reveal specific information reported by any individually identifiable respondent. The FAA has determined that the information you provide in this survey is exempt from public disclosure under the Freedom of Information Act.

### **Why was I selected for this survey?**

This survey covers general aviation aircraft and aircraft operated by air taxis and commuter air carriers. The survey sample is randomly selected, based upon the FAA Aircraft Registry as of December 31, 1989. The Registry shows you as the registrant of this aircraft on that date. Your aircraft is one of approximately 30,000 general aviation aircraft selected to be surveyed. Since the survey sample is randomly selected, it is possible that your aircraft may be selected in successive years or that more than one of your aircraft may be selected this year. This can happen if the number of aircraft of the type you own is small. When more than one of your aircraft is selected, you will receive, under separate cover, a questionnaire provided for each aircraft. Please answer all questions for the identified aircraft. If you cannot provide a precise answer to any questions, make your best estimate.

### **What should I do if . . .**

- ➔ **IF** you are no longer in possession of this aircraft but were the registered owner on December 31, 1989, try to answer all the questions. If your aircraft was sold prior to December 31, 1989, please forward this mail to the new owner for response.
- ➔ **IF** your aircraft, for whatever reasons, was not in use during calendar year 1989, *answer questions 2-5 and 13 and return the questionnaire to FAA.* The fact that your aircraft was not flown during the year is just as important as the fact that it was flown.
- ➔ **IF** your aircraft was operated by an airline (FAR Part 121 or 127 operator), *indicate this in question 2 and return the questionnaire to FAA.*
- ➔ **IF** your aircraft was operated primarily by another person or company (e.g. leased), obtain the necessary information from the operator, or forward this mail to the person or firm for response.
- ➔ **IF** your aircraft was stolen, destroyed, lost or donated to an organization, or otherwise not in your possession, and you have not yet notified the FAA Aircraft Registry, do so immediately by writing to:

Aircraft Registration Branch, AVN-450  
7500 South MacArthur Blvd.  
Oklahoma City, OK 73125.

The signature of the aircraft owner of record is required to make any changes to the aircraft registration record. If you have any questions regarding the registration of your aircraft, please call (405) 686-3116.



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

Figure A.3 Second Cover Letter

800 Independence Ave., S.W.  
Washington, D.C. 20591

February 1990

Dear Aircraft Owner:

You are one of the 30,000 general aviation aircraft owners selected at random to participate in the 1989 General Aviation Activity and Avionics Survey.

We use the information you provide to us in a variety of ways. It helps us to determine the impact of proposed changes to some of our regulations and to pinpoint potential safety problems. The information also helps us to forecast our future work force and new facility requirements (such as runways, landing aids, etc.). These are just a few examples of the uses we make of your responses to the survey.

Enclosed is a questionnaire requesting information for calendar year 1989. *After reading the instructions and the information on the back of this letter, please answer all questions for the aircraft identified on the form.*

I urge you to complete the questionnaire and use the enclosed envelope to mail it today. Your prompt response will eliminate the need for additional followup contacts.

If you have any questions or need further assistance, please call Mr. Shung-Chai Huang at (202) 267-9943 or Ms. Patricia Beardsley at (202) 267-8032.

We thank you for your participation.

Sincerely,

Bert LaCroix

Manager, Management Standards and Statistics Division,  
AMS-420

Enclosure

## *The 1989 General Aviation Activity and Avionics Survey*

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### **Why does the FAA collect this information?**

For the past 11 years, the FAA has conducted an annual sample survey to collect statistical information on the use and characteristics of the general aviation fleet. The information collected helps the FAA understand more about general aviation activities, assess the impact of general aviation on the National Airspace System, and determine its need for traffic facilities and services. These data are used by the Federal, state, and local governments, as well as by private industries and individuals, for safety analysis, planning, forecasting, research and development. We have made a concerted effort to minimize the number of questions we ask you, while still meeting the needs of the government and the public for aviation information.

### **Are the survey responses kept confidential?**

*Absolutely!!!* This annual information collection conforms to legal and administrative standards established by the Federal Government to assure confidential treatment of statistical information. The information you have provided in the past decade has never been published or released in any form that would reveal specific information reported by any individually identifiable respondent. The FAA has determined that the information you provide in this survey is exempt from public disclosure under the Freedom of Information Act.

### **Why was I selected for this survey?**

This survey covers general aviation aircraft and aircraft operated by air taxis and commuter air carriers. The survey sample is randomly selected, based upon the FAA Aircraft Registry as of December 31, 1989. The Registry shows you as the registrant of this aircraft on that date. Your aircraft is one of approximately 30,000 general aviation aircraft selected to be surveyed. Since the survey sample is randomly selected, it is possible that your aircraft may be selected in successive years or that more than one of your aircraft may be selected this year. This can happen if the number of aircraft of the type you own is small. When more than one of your aircraft is selected, you will receive, under separate cover, a questionnaire provided for each aircraft. Please answer all questions for the identified aircraft. If you cannot provide a precise answer to any questions, make your best estimate.

### **What should I do if . . .**

- **IF** you are no longer in possession of this aircraft but were the registered owner on December 31, 1989, try to answer all the questions. If your aircraft was sold prior to December 31, 1989, please forward this mail to the new owner for response.
- **IF** your aircraft, for whatever reasons, was not in use during calendar year 1989, *answer questions 2-5 and 13 and return the questionnaire to FAA.* The fact that your aircraft was not flown during the year is just as important as the fact that it was flown.
- **IF** your aircraft was operated by an airline (FAR Part 121 or 127 operator), *indicate this in question 2 and return the questionnaire to FAA.*
- **IF** your aircraft was operated primarily by another person or company (e.g. leased), obtain the necessary information from the operator, or forward this mail to the person or firm for response.
- **IF** your aircraft was stolen, destroyed, lost or donated to an organization, or otherwise not in your possession, and you have not yet notified the FAA Aircraft Registry, do so immediately by writing to:

**Aircraft Registration Branch, AVN-450  
7500 South MacArthur Blvd.  
Oklahoma City, OK 73125.**

The signature of the aircraft owner of record is required to make any changes to the aircraft registration record. If you have any questions regarding the registration of your aircraft, please call (405) 686-3116.



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

Figure A.4 Third Cover Letter

800 Independence Ave., S.W.  
Washington, D.C. 20591

April 1990

Dear Aircraft Owner:

This is your last opportunity to participate in the 1989 General Aviation Activity and Avionics Survey. We need your help.

In February and March, we sent you a general aviation activity and avionics survey questionnaire to compile the 1989 aircraft activity and avionics information. As of this date, we have not received your response.

In case the previous mailings never reached you or were misplaced, we have enclosed another identical questionnaire with a return, postage-paid envelope for your convenience. *I urge you to read the instructions and the survey information on the back of this letter, complete the questionnaire, and use the enclosed envelope to return it to us today.* If you have any questions or need further assistance, please call Mr. Shung-Chai Huang at (202) 267-9943 or Ms. Patricia Beardsley at (202) 267-8032. If your response is already in the mail, we thank you for your cooperation.

We look forward to receiving your response so that we can know more about the general aviation flying and, thereby, serve you better.

Sincerely,

Bert LaCroix  
Manager, Management Standards and Statistics Division,  
AMS-400

Enclosure

## *The 1989 General Aviation Activity and Avionics Survey*

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### **Why does the FAA collect this information?**

For the past 11 years, the FAA has conducted an annual sample survey to collect statistical information on the use and characteristics of the general aviation fleet. The information collected helps the FAA understand more about general aviation activities, assess the impact of general aviation on the National Airspace System, and determine its need for traffic facilities and services. These data are used by the Federal, state, and local governments, as well as by private industries and individuals, for safety analysis, planning, forecasting, research and development. We have made a concerted effort to minimize the number of questions we ask you, while still meeting the needs of the government and the public for aviation information.

### **Are the survey responses kept confidential?**

*Absolutely!!!* This annual information collection conforms to legal and administrative standards established by the Federal Government to assure confidential treatment of statistical information. The information you have provided in the past decade has never been published or released in any form that would reveal specific information reported by any individually identifiable respondent. The FAA has determined that the information you provide in this survey is exempt from public disclosure under the Freedom of Information Act.

### **Why was I selected for this survey?**

This survey covers general aviation aircraft and aircraft operated by air taxis and commuter air carriers. The survey sample is randomly selected, based upon the FAA Aircraft Registry as of December 31, 1989. The Registry shows you as the registrant of this aircraft on that date. Your aircraft is one of approximately 30,000 general aviation aircraft selected to be surveyed. Since the survey sample is randomly selected, it is possible that your aircraft may be selected in successive years or that more than one of your aircraft may be selected this year. This can happen if the number of aircraft of the type you own is small. When more than one of your aircraft is selected, you will receive, under separate cover, a questionnaire provided for each aircraft. Please answer all questions for the identified aircraft. If you cannot provide a precise answer to any questions, make your best estimate.

### **What should I do if . . .**

- ➔ **IF** you are no longer in possession of this aircraft but were the registered owner on December 31, 1989, try to answer all the questions. If your aircraft was sold prior to December 31, 1989, please forward this mail to the new owner for response.
- ➔ **IF** your aircraft, for whatever reasons, was not in use during calendar year 1989, *answer questions 2-5 and 13 and return the questionnaire to FAA.* The fact that your aircraft was not flown during the year is just as important as the fact that it was flown.
- ➔ **IF** your aircraft was operated by an airline (FAR Part 121 or 127 operator), *indicate this in question 2 and return the questionnaire to FAA.*
- ➔ **IF** your aircraft was operated primarily by another person or company (e.g. leased), obtain the necessary information from the operator, or forward this mail to the person or firm for response.
- ➔ **IF** your aircraft was stolen, destroyed, lost or donated to an organization, or otherwise not in your possession, and you have not yet notified the FAA Aircraft Registry, do so immediately by writing to:

**Aircraft Registration Branch, AVN-450  
7500 South MacArthur Blvd.  
Oklahoma City, OK 73125.**

The signature of the aircraft owner of record is required to make any changes to the aircraft registration record. If you have any questions regarding the registration of your aircraft, please call (405) 686-3116.

## APPENDIX B

### METHODOLOGY FOR THE 1989 ROTORCRAFT ACTIVITY SURVEY

#### 1. OVERVIEW

##### 1.1 Purpose and Background

The purpose of the Rotorcraft Activity Survey is to provide the Federal Aviation Administration (FAA) with information on the activity of the rotorcraft fleet. The information obtained from the survey enables the FAA to monitor the rotorcraft fleet so that the FAA can, among other activities, anticipate and meet demand for National Airspace System (NAS) facilities and services, assess the impact of regulatory changes on the rotorcraft fleet, and implement measures to assure the safe operation in the airspace of all aircraft.

The 1989 Rotorcraft Activity Survey is the first ever attempted census of the general aviation rotorcraft population conducted by the FAA. The census was initiated in order to address industry concerns of bias in rotorcraft statistics which were thought to stem from sample design and response problems. FAA also needed additional information about rotorcraft not currently collected. FAA Form 1800-55 was the questionnaire used for data collection (see Figure B.1).

#### 2. COVERAGE

##### 2.1 Rotorcraft

The Rotorcraft Activity Survey covers all rotorcraft registered in the United States as of December 31, 1989. The term, "rotorcraft," used in this survey refers to aircraft that use rotating wings (blades) to move through the air. In this report, rotorcraft are considered in two aircraft groups, manufacturer built and amateur built. The manufacturer built rotorcraft are further divided into piston, and single engine and multiengine turbine rotorcraft.

Certain rotorcraft have been excluded from the survey. This group consists of rotorcraft registered to dealers, rotorcraft in the process of being sold or with registration pending, and rotorcraft for which not enough information was available to categorize them properly for sampling purposes.

Rotorcraft are used for a variety of purposes such as air taxi, corporate/business, personal, recreational, instructional, and emergency medical service to name a few. Rotorcraft range in complexity from simple, amateur built rotorcraft to the more sophisticated manufacturer built multiengine turbine rotorcraft.

##### 2.2 Geographic

The rotorcraft survey conducted by the FAA covers rotorcraft registered with the United States Aircraft Registry as of December 31, 1989. Over 99 percent of these aircraft are registered to owners living in the 50 states; Washington, D.C.; Puerto Rico; and other U.S. territories.<sup>1</sup>

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<sup>1</sup>Source: FAA Aircraft Registration Master File as of December 31, 1989.



Form Approved OMB NO. 2120-0541

U.S. GOVERNMENT PRINTING OFFICE: 1969 - 304-101 - 413751-200

### 2.3 Content

The questionnaire, FAA Form 1800-55 shown previously in Figure B.1, requests the rotorcraft owner/operator to provide the following information on the aircraft's characteristics and uses for various periods:

- 1) hours by use and the number of landings for the entire calendar year, 1989; and
- 2) total airframe hours and the aircraft's base location as of December 31, 1989.

### 3. **METHODOLOGY**

The rotorcraft data were collected by mailing the questionnaire three different times (March, May and July 1990) to the owners of all rotorcraft registered in the U.S. as of December 31, 1989. In addition, the questionnaire was sent twice (March and May, 1990) to rotorcraft operators identified by the Helicopter Foundation International (HFI). The HFI provided a listing of 706 rotorcraft operators. Even though all of the rotorcraft operated by the 706 operators were also on the FAA Master File, only 127 matches could be made by name and address since the HFI listing did not identify the N-number of the rotorcraft. Thus, 579 operators received two separate questionnaires: one as HFI-identified operators operating an unknown number of rotorcraft and a second questionnaire as the FAA-identified owner of a specific rotorcraft. If multiple questionnaires for the same rotorcraft were returned, the earliest one received was used.

### 4. **RESPONSE**

The first mailing in March 1990 covered all 10,469 aircraft in the census (including 579 operators) and had an overall response rate of 55.3 percent as shown in Table B.1. The response rate was 25.6 percent for operators and 57 percent for owners. The responses for the first mailing accounted for approximately 86.0 percent of the total responses to the survey. The second mailing conducted in May included only those aircraft in the census that had not yet responded including those respondents whose first mailing had been returned by the U.S. Postal Service (i.e., postal returns). The second mailing had a response rate of 13.2 percent which accounted for approximately 9.2 percent of the total responses to the survey. In the second mailing, 68 percent of the operators responded and 7.7 percent of the owners. The third mailing conducted in July 1990 was sent only to the owners of the rotorcraft who had not responded to the first or second mailings and postal returns were eliminated. The third mailing produced a response rate of 14.6 percent, or 4.7 percent of the total responses to the survey. The valid survey responses resulted in an overall response rate of 64.2 percent. Overall, 76.2 percent of the operators and 63.5 percent of the owners responded. Adjusting for postal returns, the response rate for delivered questionnaires was 78.3 percent. Similar adjustments show operator and owner responses for delivered questionnaires to be 92.9 percent and 77.5 percent, respectively.

Each of the three mailings was accompanied by a cover letter, shown respectively in Figures B.2, B.3, and B.4 at the back of this Appendix. The third mailing also had a special insert of an article by the FAA Administrator published in the Summer 1990 edition of Rotor Magazine (Figure B.5).

TABLE B.1 SUMMARY OF RESPONSE INFORMATION

PHASE	VALID SAMPLE SIZE	# RESPONSES	RESPONSE RATE	% TOTAL RESPONSE
1st Mailing				
Operators	579	148	25.6	33.6
Owners	<u>9,890</u>	<u>5,638</u>	57.0	89.7
Total 1st Mailing:	10,469	5,786	55.3 (67.4)*	86.1
2nd Mailing <sup>2</sup>				
Operators	431	293	68.0	66.4
Owners	<u>4,252</u>	<u>326</u>	7.7	5.2
Total 2nd Mailing:	4,683	619	13.2 (22.1)*	9.2
3rd Mailing <sup>3</sup>				
Operators	0	0	0.0	0.0
Owners	<u>2,181</u>	<u>319</u>	14.6	5.1
Total 3rd Mailing:	2,181	319	14.6 (14.6)*	4.7
Census Total				
Operators	579	441	76.2	100.0
Owners	<u>9,890</u>	<u>6,283</u>	63.5	100.0
CENSUS TOTAL:	10,469	6,724	64.2 (78.3)*	100.0

\*Adjusted for postal returns.

## 5. CENSUS DESIGN

### 5.1 Census Frame and Size

The FAA Mike Monroney Aeronautical Center in Oklahoma City maintains the Aircraft Registration Master File, which is the official record of registered civil aircraft in the United States. Questionnaires were sent to owners of all rotorcraft in the master file (according to the definition in Section 2.1), with the following exceptions:

- 1) rotorcraft registered to dealers;
- 2) rotorcraft with "Sale Reported" or "Registration Pending" appearing in the record instead of the owner's name;
- 3) rotorcraft with a known, inaccurate owner's address; and
- 4) rotorcraft with missing state of registration, aircraft make-model-series code, or aircraft type information.

For calendar year 1989, 10,469 general aviation rotorcraft were surveyed. Table B.2 shows the distribution of the census by rotorcraft type.

<sup>2</sup>Includes postal returns.

<sup>3</sup>Excludes 1,883 postal returns.

TABLE B.2 CENSUS AND POPULATION DISTRIBUTION  
BY ROTORCRAFT TYPE

ROTORCRAFT TYPE	APPROXIMATE POPULATION	SAMPLE SIZE	SAMPLE AS % OF POPULATION
Manufacturer Built			
Piston	3,994	3,994	100.0
Single Engine Turbine	3,616	3,616	100.0
Multiengine Turbine	1,069	1,069	100.0
Amateur Built	<u>1,790</u>	<u>1,790</u>	100.0
TOTAL:	10,469	10,469	100.0

### 5.2 Description of Census Design

The 1989 Rotorcraft Activity Survey was initially designed to be a complete census of the rotorcraft fleet with the four exceptions listed on page B-4. However, as indicated in Table B.1, out of the 10,469 rotorcraft owners listed on the FAA Master file (including 579 rotorcraft owners identified as operators by the HFI), a total of 6,724 completed questionnaires were received which represents 64.2 percent of the targeted rotorcraft population. Therefore, the data received were extrapolated to the rotorcraft population size in order to represent all 10,469 rotorcraft in the general aviation rotorcraft fleet.

Each rotorcraft in the census was given a weight which corresponded to the number of rotorcraft in the census frame represented by that rotorcraft. When all responses to the census were tallied, each weight was adjusted according to the response rate for the cell, counting a rotorcraft for which no survey questions were answered as a non-respondent, and a rotorcraft for which at least one question was answered as a respondent. The weight adjustment is described below:

- 1) non-respondents' weights were changed to zero; and
- 2) the weights of all responding aircraft were adjusted uniformly by dividing the initial weight by the response rate for the cell.

This method of weight adjustment has several attributes. It actually incorporates the response rates into the final weights and simplifies estimation procedures.

### 5.3 Error

Errors associated with estimates derived from the census survey results fall into two categories: sampling and non-sampling errors. Sampling errors occur because the final estimates are based on a sample of only those rotorcraft that responded--not the entire population.

Non-sampling errors arise from a number of sources such as non-response, inability or unwillingness of respondents to provide correct information, differences in interpretation of questions, mistakes in recording or coding the data obtained, and others. The following sections discuss the two types of errors.

### 5.3.1 Sampling Error

In a designed survey, the sampling error associated with an estimate is generally unknown, but a measurable quantity, known as the standard error, is often used as a guide to the magnitude of sampling error. The standard error measures the variation which would occur among the estimates from all possible samples of the same design from the same population. It measures the precision with which an estimate approximates the average result of all possible samples or the result of a survey in which all elements of the population were sampled.

Since a census is a 100 percent sample, it is theoretically possible to eliminate sampling error altogether. However, there typically will be nonresponse. If the assumption is made that nonresponse is random, then the results are the same as having a survey with the original sample size, reduced by the number of nonresponses, with a 100 percent response for the survey. Since we have no strong basis to assume response biases, this is a reasonable assumption and permits the use of the standard survey estimation equations.

The user of survey results must consider sampling error along with the point estimate itself when making inferences or drawing conclusions about the sample population. A large standard error relative to an estimate indicates lack of precision and, inversely, a small standard error indicates precision. To facilitate the comparison of estimates and their errors, the tables in this publication display standard errors for all estimated quantities. In most cases, the tables contain the percent standard error, which is the standard error multiplied by 100 and divided by the corresponding estimate. The paragraphs below explain the proper interpretation and use of the errors.

An estimate and its standard error make it possible to construct an interval estimate with the prescribed confidence that the interval will include the average value of the estimate from all possible samples of the population. Table B.3 below shows selected interval widths and their corresponding confidence.

TABLE B.3 CONFIDENCE OF INTERVAL ESTIMATES

WIDTH OF INTERVAL	APPROXIMATE CONFIDENCE THAT INTERVAL INCLUDES AVERAGE VALUE
1 Standard error	68%
2 Standard errors	95%
3 Standard errors	99%

For the most part, the measure of precision presented in this report is the percent standard error (% s.e.). As explained above, this statistic is merely the ratio of the standard error to the estimate times 100 (to convert the fraction to a percent). In addition to immediately communicating the relative precision of the estimate, it allows ready comparison of the survey's performance

across variables. The following is an example of how to use the % s.e.: from Table 9.1, a 95 percent confidence interval for the number of active manufacturer built piston response would be 2,684 plus or minus 2 (1.2/100)(2,684) or the interval between 2,620 and 2,748. One would say that the number of active manufacturer built piston responses lies somewhere between 2,620 and 2,748 with 95 percent confidence. Another way of expressing this is that we are highly confident (95 percent) that the number of active manufacturer built piston responses is within plus or minus 2(1.2) percent, or 2.4 percent of 2,684.

### 5.3.2 Non-Sampling Error

Non-sampling error can be reduced through survey design, although the amount of reduction is difficult, if not impossible, to quantify in any given design. There are, however, various techniques which can limit non-sampling error. Several of these techniques were incorporated into the design of the Rotorcraft Activity Survey and are itemized below:

- 1) A second mailing and third mailing with an enclosed published article by the FAA Administrator were mailed in addition to the original mailing in order to improve the response rate, since a low response rate may be a major cause of non-sampling error due to the fact that nonrespondents may have different characteristics than respondents. The responses by rotorcraft type are listed in Table B.4. The data reveal a continuing problem with the sample frame because of incorrect addresses.
- 2) The survey questionnaire was designed to minimize misinterpretation of questions by the rotorcraft owners.
- 3) Comprehensive editing procedures insured the accuracy of the data transcription to machine readable form and the internal consistency of responses.
- 4) The official and most accurate source of information available on the civil fleet, the FAA Aircraft Registration Master File, provided the rotorcraft census list. This was supplemented by a listing of rotorcraft operators provided by the Helicopter Foundation International. Unfortunately, the high rate of postal returns reflects a seriously out-of-date rotorcraft file.

TABLE B.4 RESPONSE RATE BY ROTORCRAFT TYPE

ROTORCRAFT TYPE	RESPONSE RATE WITH POSTAL RETURNS	RESPONSE RATE ADJUSTED FOR POSTAL RETURNS
Manufacturer Built		
Piston	62.3%	76.0%
Single Engine Turbine	70.5%	85.9%
Multiengine Turbine	66.3%	80.1%
Amateur Built	54.7%	66.7%



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Figure B.2 First Cover Letter

800 Independence Ave., S.W.  
Washington, D.C. 20591

*March 1990*

*Dear Rotorcraft Owner:*

*As you well know, rotorcraft are playing an increasing role in aviation these days. Because of this increased role, the FAA is conducting a one-time special survey covering all rotorcraft.*

*The information collected will help all of us understand more about rotorcraft activities, their needs for air traffic facilities and services, and for assessing the impact of rotorcraft on the National Airspace System. These data will be used by the Federal, state, and local governments, as well as by private industry and individuals, for safety analysis, planning, forecasting, research and development.*

*The enclosed 1989 Rotorcraft Activity Survey questionnaire requests information for calendar year 1989.*

*After reading the instructions and the information on the back of this letter, please answer all the questions for the aircraft identified on the form and mail it today.*

*If you have any questions or need further assistance, please call Ms. Patricia Beardsley at (202) 267-8032 or Mr. Shung-Chai Huang at (202) 267-9943.*

*We appreciate your participation.*

*Sincerely,*

*Bert LaCroix*  
Bert LaCroix

*Manager, Management Standards  
and Statistics Division*

*Enclosure*

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## The 1989 Rotorcraft Activity Survey

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### *Why does the FAA collect this information?*

The information collected by the survey will be used in a variety of ways. It will help the FAA to determine the need for changes to some of our regulations and the impact of those changes, and to pinpoint potential safety problems. The information also will help us to forecast rotorcraft activity and to help keep our Rotorcraft Master Plan up to date.

### *Will the survey responses be kept confidential?*

**Absolutely!!!** The information you provide will not be published or released in any form that would reveal specific information reported by any individually identifiable respondent.

### *Why was I selected for this survey?*

The survey covers all rotorcraft registered with the FAA as of December 31, 1989. The Registry shows you as the registrant of this aircraft on that date. If you own more than one rotorcraft, you will receive a questionnaire for each. Please answer all questions for the aircraft identified on the questionnaire.

It is very important that we receive a survey questionnaire for each and every rotorcraft registered as of December 31, 1989 so we can make accurate activity estimates for the various rotorcraft models and missions. In some cases the aircraft is not operated by the registered owner, but is actually being operated by another party under a long term operator or lessee arrangement. To increase the chances of covering 100% of the fleet, we are also mailing a package of blank questionnaires to a list of operators provided by the rotorcraft industry.

**IF** You receive questionnaires as both a registered owner and an operator, complete whichever form is the most convenient for you.

**IF** You are the owner, but not the operator and cannot complete the form, please send it to the operator. Please do not assume that the operator has received a questionnaire. That company may not be on our list.

We realize, that by doing this, we will get duplicate forms for some aircraft, but we will be able to eliminate duplicate responses. We would rather take this additional step than risk missing an aircraft. So whether you are an owner, operator, or both please complete the form as best you can and return it to us.

### *What should I do?*

**IF** Your rotorcraft, for whatever reasons, was not in use during calendar year 1989, answer questions 1-9 and return the questionnaire to FAA. The fact that your rotorcraft was not flown during the year is just as important as the fact that it was flown.

**IF** You cannot provide a precise answer to any questions, make your best estimate.

**IF** You are no longer in possession of this rotorcraft but were the registered owner on December 31, 1989, try to answer all the questions.

**IF** your rotorcraft was sold prior to December 31, 1989, please forward this mail to the new owner for response.

**IF** Your rotorcraft was stolen, destroyed, lost, donated to an organization, or otherwise not in your possession, and you have not yet notified the FAA Registry, do so immediately by writing to:

Aircraft Registration Branch, AVN-450  
7500 South MacArthur Blvd.  
Oklahoma City, OK 73125

The signature of the rotorcraft owner of record is required to make any changes to the aircraft registration record.

If you have any questions regarding the registration of your aircraft, please call (405) 686-3116.





U.S. Department  
of Transportation  
Federal Aviation  
Administration

**Figure B.3 Second Cover Letter**

800 Independence Ave. S.W.  
Washington, D.C. 20591

*April 1990*

*Dear Rotorcraft Owner:*

*In March we sent you a 1989 Rotorcraft Activity Survey questionnaire. The information collected by this survey will be used to help all of us understand more about rotorcraft activity and their missions.*

*As of this date, we have not received your response. In case our first mailing never reached you or was misplaced, we have enclosed another questionnaire and a return, postage-paid envelope.*

*I urge you to read the instructions and information on the back page of this letter, complete the questionnaire for the aircraft identified on the form, and use the enclosed envelope to return it to us today.*

*If you have any questions or need further assistance, please contact Ms. Patricia Beardsley at (202) 267-8032 or Mr. Shung-Chai Huang at (202) 267-9943.*

*We appreciate your participation.*

*Sincerely,*

*Bert LaCroix*  
Bert LaCroix

Manager, Management Standards  
and Statistics Division, AMS-400

*Enclosure*

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## The 1989 Rotorcraft Activity Survey

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### ***Why does the FAA collect this information?***

The information collected by the survey will be used in a variety of ways. It will help the FAA to determine the need for changes to some of our regulations and the impact of those changes, and to pinpoint potential safety problems. The information also will help us to forecast rotorcraft activity and to help keep our Rotorcraft Master Plan up to date.

### ***Will the survey responses be kept confidential?***

***Absolutely!!!*** The information you provide will not be published or released in any form that would reveal specific information reported by any individually identifiable respondent.

### ***Why was I selected for this survey?***

The survey covers all rotorcraft registered with the FAA as of December 31, 1989. The Registry shows you as the registrant of this aircraft on that date. If you own more than one rotorcraft, you will receive a questionnaire for each. Please answer all questions for the aircraft identified on the questionnaire.

It is very important that we receive a survey questionnaire for each and every rotorcraft registered as of December 31, 1989 so we can make accurate activity estimates for the various rotorcraft models and missions. In some cases the aircraft is not operated by the registered owner, but is actually being operated by another party under a long term operator or lessee arrangement. To increase the chances of covering 100% of the fleet, we are also mailing a package of blank questionnaires to a list of operators provided by the rotorcraft industry.

**IF** You receive questionnaires as both a registered owner and an operator, complete whichever form is the most convenient for you.

**IF** You are the owner, but not the operator and cannot complete the form, please send it to the operator. Please do not assume that the operator has received a questionnaire. That company may not be on our list.

We realize, that by doing this, we will get duplicate forms for some aircraft, but we will be able to eliminate duplicate responses. We would rather take this additional step than risk missing an aircraft. So whether you are an owner, operator, or both please complete the form as best you can and return it to us.

### ***What should I do?***

**IF** Your rotorcraft, for whatever reasons, was not in use during calendar year 1989, answer questions 1-9 and return the questionnaire to FAA. The fact that your rotorcraft was not flown during the year is just as important as the fact that it was flown.

**IF** You cannot provide a precise answer to any questions, make your best estimate.

**IF** You are no longer in possession of this rotorcraft but were the registered owner on December 31, 1989, try to answer all the questions.

**IF** your rotorcraft was sold prior to December 31, 1989, please forward this mail to the new owner for response.

**IF** Your rotorcraft was stolen, destroyed, lost, donated to an organization, or otherwise not in your possession, and you have not yet notified the FAA Registry, do so immediately by writing to:

Aircraft Registration Branch, AVN-450  
7500 South MacArthur Blvd.  
Oklahoma City, OK 73125

The signature of the rotorcraft owner of record is required to make any changes to the aircraft registration record.

If you have any questions regarding the registration of your aircraft, please call (405) 680-3116.



U.S. Department  
of Transportation  
Federal Aviation  
Administration

Figure B.4 Third Cover Letter

800 Independence Ave., S.W.  
Washington, D.C. 20591

July 1990

*Dear Rotorcraft Owner:*

*This is your last opportunity to participate in the 1989 Rotorcraft Activity Survey.*

*In March and April, we asked you to complete the survey questionnaire which will be used to make estimates of rotorcraft activity. We have not yet received your response.*

*To make accurate activity estimates, we need information for each and every rotorcraft registered with the FAA as of December 31, 1989. Please consider completing the enclosed survey form and sending it back to us. (Instructions are on the back of this letter.)*

*If you have any reservations or questions about completing the form, or need further assistance, please call Ms. Patricia Beardsley at (202) 267-8032 or Mr. Shung-Chai Huang at (202) 267-9943.*

*We appreciate your cooperation.*

*Sincerely,*

  
Bert LaCroix

Manager, Management Standards  
and Statistics Division, AMS-400

*Enclosure*

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## The 1989 Rotorcraft Activity Survey

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### *Why does the FAA collect this information?*

The information collected by the survey will be used in a variety of ways. It will help the FAA to determine the need for changes to some of our regulations and the impact of those changes, and to pinpoint potential safety problems. The information also will help us to forecast rotorcraft activity and to help keep our Rotorcraft Master Plan up to date.

### *Will the survey responses be kept confidential?*

**Absolutely!!!** The information you provide will not be published or released in any form that would reveal specific information reported by any individually identifiable respondent.

### *Why was I selected for this survey?*

The survey covers all rotorcraft registered with the FAA as of December 31, 1989. The Registry shows you as the registrant of this aircraft on that date. If you own more than one rotorcraft, you will receive a questionnaire for each. Please answer all questions for the aircraft identified on the questionnaire.

It is very important that we receive a survey questionnaire for each and every rotorcraft registered as of December 31, 1989 so we can make accurate activity estimates for the various rotorcraft models and missions. In some cases the aircraft is not operated by the registered owner, but is actually being operated by another party under a long term operator or lessee arrangement. To increase the chances of covering 100% of the fleet, we are also mailing a package of blank questionnaires to a list of operators provided by the rotorcraft industry.

**IF** You receive questionnaires as both a registered owner and an operator, complete whichever form is the most convenient for you.

**IF** You are the owner, but not the operator and cannot complete the form, please send it to the operator. Please do not assume that the operator has received a questionnaire. That company may not be on our list.

We realize, that by doing this, we will get duplicate forms for some aircraft, but we will be able to eliminate duplicate responses. We would rather take this additional step than risk missing an aircraft. So whether you are an owner, operator, or both please complete the form as best you can and return it to us.

### *What should I do?*

**IF** Your rotorcraft, for whatever reasons, was not in use during calendar year 1989, answer questions 1-9 and **return the questionnaire to FAA**. The fact that your rotorcraft was not flown during the year is just as important as the fact that it was flown.

**IF** You cannot provide a precise answer to any questions, make your best estimate.

**IF** You are no longer in possession of this rotorcraft but were the registered owner on December 31, 1989, try to answer all the questions.

**IF** your rotorcraft was sold prior to December 31, 1989, please forward this mail to the new owner for response.

**IF** Your rotorcraft was stolen, destroyed, lost, donated to an organization, or otherwise not in your possession, and you have not yet notified the FAA Registry, do so immediately by writing to:

Aircraft Registration Branch, AVN-450  
7500 South MacArthur Blvd.  
Oklahoma City, OK 73125

The signature of the rotorcraft owner of record is required to make any changes to the aircraft registration record.

If you have any questions regarding the registration of your aircraft, please call (405) 680-3116.

## ASK THE ADMINISTRATOR

### FAA Helicopter Survey Will Improve Services to Users



**James B. Busey**  
Administrator, Federal Aviation  
Administration

*Ask the Administrator is a regular feature column in Rotor magazine. It reaches the top leaders of the civil helicopter industry and serves as a direct communication link between the rotorcraft community and the FAA Administrator.*

**Mr. Administrator:** The FAA has recently initiated a survey of all helicopters registered in the United States.

An earlier survey was done under FAA contract with participation of the Helicopter Foundation International (HFI), and in cooperation with HAI's Safety Through Accurate Technical Statistics (S.T.A.T.S.) Program, which recommended follow on 100 per cent surveys annually.

**What do you plan to accomplish with the survey, and when will the results be available?**

**Answer:** It has become clear to me that rotorcraft are playing an increasingly important role in U.S. aviation. Helicopters have become a dominant force in specialized areas such as servicing the natural resource industry, including oil exploration and production, forestry and agriculture, and in law enforcement and emergency medical services. Other important areas continue to grow. These include air taxi charter, executive and business

transportation, and aerial observation and application.

Rotorcraft commercial passenger traffic does not appear to be significant today when compared to national totals; however, I believe we will see rapid growth in the commercial passenger area this decade. With new and improved passenger-friendly, all-weather, turbine-powered helicopters coming into the fleet, and the potential that tiltrotor technology offers, the rotorcraft industry should be in a position to capture an increasing market share of short-haul passengers.

Our planning studies indicate that by 2010 rotorcraft could provide as much as 10 percent of intercity air passenger operations capacity in the National Airspace System. This would represent phenomenal growth. These forecasts are driven by two key factors: First, by the end of this decade the number of capacity-constrained airports in this country is expected to almost double from 22 to 37. Secondly, improved helicopters and tiltrotors will be available and capable of operating reliably, independent of congested air routes and runways. The FAA is committed to doing the necessary air traffic control and airspace work to permit this to happen. We are also committed to doing our share to support state and local governments and developers in their efforts to bring public use heliports and vertiports on-line.

The 1989 Rotorcraft Activity Survey will help the Federal Aviation Administration improve the services it provides to system users. To make decisions on what services are needed, and in which locations, we need accurate operations data. This data is also important for improving our rotorcraft forecasts, which serve as a foundation for planning and development of future strategies. The 100 percent rotorcraft activity survey is targeted at developing this industry data.

Since 1977, the FAA, using sampling techniques, has collected general aviation activity information as part of its General Aviation Activity and Avionics (GA) Survey. The activity information collected includes such items as total flight hours, flight hours

by use category, total lifetime airframe hours, number of landings, and the state where the aircraft is based. Categories of use include areas such as commuter air carrier, business transportation, and aerial observation. The survey is broad and covers the full spectrum of General Aviation aircraft: fixed-wing powered aircraft, rotorcraft, gliders, blimps, dirigibles, and balloons.

Although rotorcraft are included in the GA Surveys, their data is not categorized such that it clearly and completely describes rotorcraft operations, and the GA Survey does not collect data on types of landing facilities used by rotorcraft. Therefore, the data is not segmented into all the areas of particular interest to rotorcraft owners and operators. This additional information is captured in the new survey.

Another concern is that rotorcraft represents only 4 percent of the registered general aviation fleet that is being sampled. As a result, year-to-year rotorcraft data showed more variability than we would like to see. The one-time 100 percent survey will enable us to accurately describe helicopter operations in 1989. This data will serve as a base for current decisions and improve forecasts and future planning. I believe it will aid manufacturers and operators in developing strategies that will be beneficial to the overall growth and health of the industry.

Questionnaires were mailed in late March, 1990. The response rate has been good; by mid-June, over 60% of the survey forms were completed and submitted to FAA. Since our goal is to collect data on all helicopters, we are now taking steps to encourage owners and operators, who have not as yet responded, to fill out their forms. Data collection should be completed by the end of July and survey results will be available by the end of the year. I'm sure that you in the industry are as anxious as I am to see the results of this survey.

The survey could not be successful without the cooperation of the owners and operators. The FAA has appreciated the interest and support that the industry, and the Helicopter Association International, has given to this effort.

## APPENDIX C

SDR AIRCRAFT GROUP NAME  
FAA MANUFACTURER/MODEL CODES

PAGE 1 OF 12

SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE
ADAMS A50S	0050101	AIRPTSA	4570624	AMTR RICE	05601YQ	AMTRHMS2C	05612HN	AMTRWGAG	05655YX		
ADAMS A50S	0050103	AIRSPC18	0440104	AMTR RS15	05647AL	AMTRHJMS5	0561328	AMTRWIGULL	05613VG		
ADAMS A50S	0050105	AIRTRCAT300	0390101	AMTR S14	0566157	AMTRJBBIANS	05613BR	AMTRWMSKYTGR	05613YX		
ADAMS AB	0050100	AIRTRCAT300	0390103	AMTR SCPT1	05613PE	AMTRKBTWNSTR	05613QS	AMTRWRF4U	0566446		
ADAMSTT11	8950104	AIRTRCAT300	0390104	AMTR SKYST	05613HH	AMTRLASPEC	05601SU	AMTRWTFDA	9790161		
AERORSJ2	5500604	AIRTRCAT400	0390202	AMTR SNDPIP	05613FM	AMTRLABAT	056125Q	AMTRXPCUEBA	05611B6		
AEROSP262	6380502	AIRTRCAT400	0390203	AMTR SNOOP2	05613DZ	AMTRLEKITTEN	056123Z	AMTRYLWDR	0561275		
AEROSP262	6380526	AIRTRCAT500	0390303	AMTR SPAD7	05608A7	AMTRLLITTING	05612QS	AMTRGRN14	0740102		
AEROSP360	8680662	ALCAIRARGO	0530102	AMTR SPTBPL	05655D1	AMTRMLALCO	05611GL	ARACFTSPORT	0840102		
AEROSP601	8680661	AMD FALC10	2730101	AMTR TMK	4220120	AMTRMLWLC	05613VU	ARACFTSPORT	0840110		
AEROSPAS355	8680807	AMD FALC20	2720302	AMTR TORO	05655E9	AMTRLDZUTCH	0562898	ARCRNEH37	8141617		
AEROSPAS355	8680805	AMD FALC20	2720303	AMTR VAN	05613S3	AMTRMFF2	0562581	ARCRNEH37	8142801		
AEROSPAS355	8680806	AMD FALC20	2720304	AMTR VECITY	05612DU	AMTRMHR2	05611DD	ARCTICS1A	1850202		
AEROSPAS355	8680810	AMD FALC20	2720306	AMTR VICKER	05613CE	AMTRMIMIG15	056129C	ARCTICS1A	1850204		
AEROSPAS355	8680812	AMD FALC20	2730103	AMTR W11	05653C6	AMTRMJSLOVIN	056123A	ARCTICS1A	1850206		
AEROSPAT42	8680920	AMD FALC20	2730150	AMTR WD6	056013R	AMTRMVSANAC	05608T7	ARCTICS1A	1850208		
AEROSPAT42	8680930	AMD FALC50	2730106	AMTR WODSTK	05647Y3	AMTRMSF85	05613KQ	ARCTICS1A	1850210		
AEROSPAS316	8680207	AMEGLEEAGLET	0650102	AMTR XTC	9570728	AMTRNANORD	6380102	ARCTICS1A	1850212		
AEROSPAS316	8680515	AMEGLEEAGLET	0650104	AMTR ZIA	0130240	AMTRNCLNCAIR	056129G	ARCTICS1A	1850216		
AEROSPAS316	8680605	AMEGLEEAGLET	0650106	AMTR ZPYSPT	05646BN	AMTRNCLNCAIR	05612ML	ARCTICS1B1	1850302		
AEROSPAS316	8680615	AMEGLEEAGLET	0650108	AMTR ZUNI	0130202	AMTRNCLNCAIR	05613B5	ARCTICS1B1	1850304		
AEROSPAS365	8680669	AMERANS56	0580104	AMTR ZUNI	0130230	AMTRNPVCRAFT	13027C7	ARCTICS1B1	1850308		
AERPEGM100S	0200506	AMERAPPILGRM	0620104	AMTRABBYACE	00301CD	AMTRPAPUSHER	05613KS	ARCTICS1B2	1850303		
AETNA 2SA	0220102	AMTR 3A	05601BP	AMTRAAJACE	0030537	AMTRPEFLTSTR	05644KB	AROCARAROCAR	0100102		
AGUSTA205	1181414	AMTR 850	0566042	AMTRACELITE	13027GG	AMTRP IAX3	05604T4	ARONCA15	0191202		
AGUSTA206AGS	0260301	AMTR A4C	7710110	AMTRAIPIXIE	0564215	AMTRP IAX3	05604T8	ARONCA15	0191204		
AGUSTA206AGS	0260302	AMTR AA4	05637P8	AMTRARBE	05612PT	AMTRP IAX3	05604UQ	ARONCA58	0191002		
AGUSTAA109	0260109	AMTR AN1	70401RZ	AMTRASSTRILT	056130Q	AMTRP IAX3	05637C2	ARONCA58	0191006		
AGUSTAA109	0260112	AMTR AOP	0881210	AMTRATFALCXP	05658MR	AMTRP IAX3	05637C9	ARONCA58	0191008		
AGUSTAA109	0260120	AMTR B10	0566605	AMTRAV400	05613EU	AMTRP IAX3	7001213	ARONCA58	0191010		
AIRBLDPRNCX	0320102	AMTR B2R	056134H	AMTRAWACO	05613VL	AMTRP JLA	056125C	ARONCA58	0190802		
AIRMECA1	0400102	AMTR C2	0563781	AMTRBA1918	05611CH	AMTRP TFCALCON	05658UG	ARONCA65	0190902		
AIRMECA1	0400106	AMTR DK1	0564406	AMTRBDEDE5	11307M9	AMTRPUGW4	05647H6	ARONCA65	0190906		
AIRMECA1	0400108	AMTR DRFT	05675WR	AMTRBIWT11	05613LA	AMTRQCCHLNGR	05676V6	ARONCA65	0190908		
AIRMECA1	0400113	AMTR DS1	056136N	AMTRBNEINCA	0566041	AMTRRBB1	056137V	ARONCA65	0190910		
AIRMECA1	0400302	AMTR F1156	5910310	AMTRBSCONCPT	1240104	AMTRREPANTHR	05676K6	ARONCA65	0190914		
AIRPTSA	0144202	AMTR GOOD	05613FX	AMTRBTEARNET	05602VE	AMTRRRH3	056033X	ARONCA65	0190918		
AIRPTSA	0144204	AMTR GRKAKE	39122BB	AMTRCPRATS	05612WV	AMTRRUDEFINT	0569021	ARONCA65	0190916		
AIRPTSA	1850102	AMTR HOLSER	05612TB	AMTRCVKARATO	056125D	AMTRRUVAZEZE	0569084	ARONCA65	0190902		
AIRPTSA	1850104	AMTR HP11	0564752	AMTRCZOZY	05613R8	AMTRSAFLAYBY	86502M1	ARONCA65	0190104		
AIRPTSA	1850106	AMTR HUMMER	0564475	AMTRDCCD1	05612TF	AMTRSASTOLP	8660104	ARONCA65	0190302		
AIRPTSA	1850108	AMTR JMI01	05601UN	AMTRDFKITFOX	05613LZ	AMTRSGF12	47008B1	ARONCA65	0190304		
AIRPTSA	1850110	AMTR KV3	0560887	AMTRDSD2	05601GX	AMTRSGF9	4700216	ARONCAF	0190702		
AIRPTSA	1850112	AMTR MARKEN	0563802	AMTRDSALPHA	05613GU	AMTRTCATAC	05613GZ	ARONCALB	0190604		
AIRPTSA	1850114	AMTR MENZIE	13027HJ	AMTRECLASER	6560105	AMTRTJMR1	05601F8	ARONCALC	0190606		
AIRPTSA	1850118	AMTR P51X	1690462	AMTRES300	05675EK	AMTRTSSSHAWK	05613QQ	ARONCAM	0190504		
AIRPTSA	1850120	AMTR PROGRS	05612UY	AMTRETXAIR	0564408	AMTRTTTAL	0565383	AUGSBUK630	05604MR		
AIRPTSA	1850122	AMTR RAIDER	05613A3	AMTREWEA230	05613LX	AMTRVDOWL	0562154	AVIANWCLIPPR	0900108		
AIRPTSA	4570620	AMTR REP DGA	0566171	AMTRGTT51	05663CK	AMTRVPVAMP IR	05647QT	AVIANWFALCON	0900102		
				AMTRRH1A1112	5621012	AMTRVRSUNBRD	05612BB	AVIANWAGNUM	0900110		

APPENDIX C

SDR AIRCRAFT GROUP NAME  
FAA MANUFACTURER/MODEL CODES

PAGE 2 OF 12

SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE
AVIANWSKYHWK	0900104	BBAVIA7	21101N8	BEECH 18	1151014	BEECH 35	1151506	BEECH 55	1152729
AYRES S2	0143006	BBAVIA7	21101NG	BEECH 18	1151016	BEECH 35	1151508	BEECH 55	1152730
AYRES S2	0143010	BBAVIA7	21101NN	BEECH 18	1151018	BEECH 35	1151510	BEECH 55	1152732
AYRES S2	0143012	BBAVIA7	21101NS	BEECH 18	1151019	BEECH 35	1151512	BEECH 56	1152736
AYRES S2	0143022	BBAVIA7	21101P3	BEECH 18	1151020	BEECH 35	1151514	BEECH 56	1152738
AYRES S2	0970100	BBAVIA7	21101PH	BEECH 18	1151021	BEECH 35	1151516	BEECH 58	1152740
AYRES S2	0970101	BBAVIA7	21101PK	BEECH 18	1151022	BEECH 35	1151518	BEECH 58	1152744
AYRES S2	0970105	BBAVIA7	21101PN	BEECH 18	1151023	BEECH 35	1151520	BEECH 58	1152746
AYRES S2	0970106	BBAVIA7	21101PT	BEECH 18	1151024	BEECH 35	1151522	BEECH 60	1153602
AYRES S2	0970107	BBAVIA7	21101PY	BEECH 18	1151026	BEECH 35	1151524	BEECH 60	1153604
AYRES S2	0970202	BBAVIA8	1220803	BEECH 18	1151040	BEECH 35	1151526	BEECH 60	1153605
AYRES S2	0970210	BBAVIA8	2110612	BEECH 18	1151042	BEECH 35	1151528	BEECH 65	1152802
AYRES S2	0970215	BCRAFTB	1110102	BEECH 18	1151044	BEECH 35	1151530	BEECH 65	1152803
AYRES S2	7630202	BEAGLE121	1120424	BEECH 1900	1154160	BEECH 35	1151532	BEECH 65	1152805
AYRES S2	7630203	BEAGLE121	1120425	BEECH 1900	1154161	BEECH 35	1151538	BEECH 76	1153005
AYRES S2	7630303	BEACH 100	1152915	BEECH 200	1152920	BEECH 35	1151544	BEECH 77	1153007
AYRES S2	8380202	BEECH 100	1152916	BEECH 200	1152922	BEECH 35	1151546	BEECH 80	1152806
AYRES S2	8380204	BEECH 100	1152919	BEECH 200	1152924	BEECH 35	1151548	BEECH 80	1152807
AYRES S2	8380206	BEECH 1074	1151606	BEECH 200	1152926	BEECH 36	1151602	BEECH 80	1152808
AYRES S2	8380302	BEECH 17	1150504	BEECH 200	1152928	BEECH 36	1151603	BEECH 80	1152809
AYRES S2	8380306	BEECH 17	1150508	BEECH 200	1152929	BEECH 36	1151604	BEECH 80	1152812
BAG	1500217	BEECH 17	1150512	BEECH 23	1151202	BEECH 36	1151605	BEECH 90	1152904
BAG B206	1121224	BEECH 17	1150518	BEECH 23	1151208	BEECH 36	1151607	BEECH 90	1152907
BAG	4230170	BEECH 17	1150530	BEECH 23	1151212	BEECH 45	1152002	BEECH 90	1152908
BALWKSFIREFY	1050100	BEECH 17	1150534	BEECH 23	1151214	BEECH 45	1152006	BEECH 90	1152912
BALWKSFIREFY	1050101	BEECH 17	1150538	BEECH 23	1151215	BEECH 45	1152008	BEECH 90	1152913
BALWKSFIREFY	1050103	BEECH 17	1150550	BEECH 23	1151216	BEECH 45	1152010	BEECH 90	1152914
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BALWKSFIREFY	1050109	BEECH 17	1150558	BEECH 23	1151242	BEECH 45	1152014	BEECH 95	1153404
BALWKSFIREFY	1050110	BEECH 17	1150564	BEECH 23	1151250	BEECH 50	1152502	BEECH 95	1153406
BALWKSFIREFY	10501A9	BEECH 18	1150202	BEECH 23	1151252	BEECH 50	1152506	BEECH 95	1153408
BARNADD31	1030104	BEECH 18	1150204	BEECH 23	1151253	BEECH 50	1152510	BEECH 95	1153410
BARTLTL13	1050102	BEECH 18	1150702	BEECH 23	1151254	BEECH 50	1152512	BEECH 99	1154002
BBAVIA11	0191102	BEECH 18	1150902	BEECH 300	1152930	BEECH 50	1152515	BEECH 99	1154003
BBAVIA11	0191104	BEECH 18	1150904	BEECH 33	1151402	BEECH 50	1152516	BEECH 99	1154004
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BBAVIA11	0191108	BEECH 18	1150911	BEECH 33	1151406	BEECH 50	1152520	BELL 204	1181404
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BBAVIA402	2110204	BEECH 18	1150913	BEECH 33	1151410	BEECH 50	1152524	BELL 206	1181502
BBAVIA7	2110102	BEECH 18	1151001	BEECH 33	1151422	BEECH 50	1152526	BELL 206	1181506
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BBAVIA7	2110116	BEECH 18	1151007	BEECH 33	1151425	BEECH 50	1152534	BELL 206	1181522
BBAVIA7	2110120	BEECH 18	1151008	BEECH 33	1151432	BEECH 50	1152536	BELL 206	1182103
BBAVIA7	2110124	BEECH 18	1151010	BEECH 33	1151434	BEECH 55	1152702	BELL 206	1182107
BBAVIA7	2110126	BEECH 18	1151011	BEECH 33	1151435	BEECH 55	1152704	BELL 206	1182108
BBAVIA7	2110130	BEECH 18	1151012	BEECH 35	1151502	BEECH 55	1152706	BELL 212	1181420
BBAVIA7	21101MW	BEECH 18	1151013	BEECH 35	1151504	BEECH 55	1152708	BELL 214	1182100

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SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE
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CESSNA172	2072438	CESSNA185	2072820	CESSNA208	2073702	CESSNA310	2074216	CESSNA402	207590L		
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CESSNA180	2072608	CESSNA195	2073106	CESSNA210	2073430	CESSNA310	2074244	CESSNA421	2076016		
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FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME
2076604	CESNA500	2400102	CONAERLA4	CURTISTRVAIR	2621818	CVAC	PBY6	2421302	DORNERD0228	2995000		2990704		2990721		2990102	
2076606	CESNA500	2400108	CONAERLA4	CURTISTRVAIR	2621820	CVAC	STC580	2422801	DORNERD027	2991404		3020302		3020306		3020406	
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2076605	CESNA501	5110306	CONAERLA4	CURTISTRVAIR	2621826	CVAC	STC580	2422806	DORNERD028	3020514		3021401		3021404		3021433	
2076802	CESNA650	5110310	CONAERLA4	CURTISTRVAIR	2621830	CVAC	STC580	2423001	DORNERD028	3021424		3021457		3021458		3021461	
2070502	CESNAAW	5110312	CONAERLA4	CURTISTRVAIR	2621902	CVAC	STC600	2422660	DORNERD028	3021462		3021472		3021474		3021478	
2073803	CESNAT303	5110320	CONAERLA4	CURTISTRVAIR	2621904	CVAC	STC640	2422814	DORNERD028	3021502		3021506		3021510		3021506	
2074321	CESNAT37	2480122	CORCRNGLIDER	CURTISTRVAIR	2621908	DART	G	2700102	DORNERD028	3021512		3021516		3021518		3021522	
2071302	CESNAT50	2480124	CORCRNGLIDER	CVAC 240	2422601	DART	G	2700104	DORNERD027	3021522		3021524		3021530		3021536	
2071306	CESNAT50	2480126	CORCRNGLIDER	CVAC 240	2422602	DART	G	2700106	DORNERD027	3021534		3021536		3021706		3021908	
2071308	CESNAT50	2580104	CUNHAMPT6	CVAC 240	2422604	DART	G	2700108	DORNERD028	3021534		3021536		3021908		302199F	
2070702	CESNAUC77	2620202	CURTIS22	CVAC 240	2422608	DAVIS	D1	2740504	DORNERD028	3022051		3022065		3022065		3022065	
2070802	CESNAUC77	2620302	CURTISFLING	CVAC 240	2422610	DAVIS	D1	2740506	DORNERD028	3022110		3022130		3022130		3022130	
2070902	CESNAUC94	2620604	CURTISJNAL	CVAC 240	2422612	DAVIS	D1	2740508	DORNERD028	3021302		3021401		3021401		3021401	
2071002	CESNAUC94	2620502	CURTISJR	CVAC 240	2422626	DAVIS	V3	2743002	DORNERD028	3021404		3021433		3021433		3021433	
2071102	CESNAUC94	2622002	CURTISO2	CVAC 240	2422628	DHAV	DH112	2800421	DORNERD028	3021424		3021457		3021457		3021457	
0110100	CHILD S1	2622202	CURTISP40	CVAC 240	2422633	DHAV	DH82	2801000	DORNERD028	3021433		3021461		3021461		3021461	
0110301	CHILD S1	2622203	CURTISP40	CVAC 240	2422634	DHAV	DH87	2801013	DORNERD028	3021436		3021462		3021462		3021462	
0110303	CHILD S1	2622206	CURTISP40	CVAC 240	2422642	DHAV	DHC1	2801702	DORNERD028	3021436		3021466		3021466		3021466	
0110201	CHILD S2	2620802	CURTISROBIN	CVAC 240	2422643	DHAV	DHC1	2801704	DORNERD028	3021454		3021467		3021467		3021467	
0110304	CHILD S2	2620806	CURTISROBIN	CVAC 240	2422644	DHAV	DHC1	2801712	DORNERD028	3021454		3021472		3021472		3021472	
221020X	CHRIS HUSKY	2620808	CURTISROBIN	CVAC 240	2422647	DHAV	DHC1	2801714	DORNERD028	3021458		3021474		3021474		3021474	
0110202	CLARK 1000	2620904	CURTISSEDAN	CVAC 340	2422648	DHAV	DHC1	2801716	DORNERD028	3021458		3021478		3021478		3021478	
2230302	CLARK 12	2621004	CURTISTRVAIR	CVAC 340	2422706	DHAV	DHC1	2801736	DORNERD028	3021460		3021481		3021481		3021481	
1900302	CNDAIRCL600	2621006	CURTISTRVAIR	CVAC 340	242270A	DHAV	DHC1	2801738	DORNERD028	3021462		3021481		3021481		3021481	
1900304	CNDAIRCL600	2621010	CURTISTRVAIR	CVAC 340	2422718	DHAV	DHC2	2801739	DORNERD028	3021462		3021481		3021481		3021481	
1900305	CNDAIRCL600	2621012	CURTISTRVAIR	CVAC 340	2422742	DHAV	DHC2	2800102	DORNERD028	3021466		3021481		3021481		3021481	
1900812	CNDAIRF86E	2621104	CURTISTRVAIR	CVAC 440	2422902	DHAV	DHC2	2800105	DORNERD028	3021472		3021481		3021481		3021481	
1990102	CNTRAR101	2621108	CURTISTRVAIR	CVAC 440	2422904	DHAV	DHC2	2800106	DORNERD028	3021472		3021481		3021481		3021481	
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2300180	COLT 240A	2621506	CURTISTRVAIR	CVAC BT13	2420224	DHAV	DHC4	2800302	DORNERD028	3021516		3021481		3021481		3021481	
2300102	COLT 77A	2621508	CURTISTRVAIR	CVAC BT13	2420226	DHAV	DHC4	2800304	DORNERD028	3021518		3021481		3021481		3021481	
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2370502	COMWTH180	2621604	CURTISTRVAIR	CVAC BT15	2420230	DHAV	DHC7	2802708	DORNERD028	3021524		3021481		3021481		3021481	
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2370602	COMWTH185	2621702	CURTISTRVAIR	CVAC BT15	2420312	DHAV	DHC8	2802710	DORNERD028	3021530		3021481		3021481		3021481	
2370604	COMWTH185	2621704	CURTISTRVAIR	CVAC L13	2420702	DHAV	DHC8	2809002	DORNERD028	3021534		3021481		3021481		3021481	
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2370704	COMWTH190	2621804	CURTISTRVAIR	CVAC L13	2420706	DHAV	DHC8	2801002	DORNERD028	3021536		3021481		3021481		3021481	
2371206	COMWTH7000	2621806	CURTISTRVAIR	CVAC P4Y	2421102	DOMTON800		2801005	DORNERD028	3021536		3021481		3021481		3021481	
2371422	COMWTH9000	2621808	CURTISTRVAIR	CVAC PBY5	2421208	DORNER133		2801015	DORNERD028	3021536		3021481		3021481		3021481	
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5110202	CONAERC2	2621814	CURTISTRVAIR	CVAC PBY5	2421230	DORNERD0228		2990006	DORNERD028	3021536		3021481		3021481		3021481	
								2992030	DORNERD028	3021536		3021481		3021481		3021481	

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SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE
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DOUG DC9	3022082	FRCHLD22	3370104	FRCHLDM62	3371608	GRUMAF6F	395069G	GULSTM112	7630314
DOUG DOLPHN	3020104	FRCHLD22	3370108	FRCHLDM62	3371618	GRUMAF7F	3950704	GULSTM112	7630315
DRIGSSKYLK3	3160502	FRCHLD22	3370110	FRCHLDM62	3371620	GRUMAF8F	3950801	GULSTM500	0141102
DURMOLF46	3200502	FRCHLD22	3370112	FRCHLDM62	3371622	GRUMAF8F	3950802	GULSTM500	0141104
EAGLE DW	3230203	FRCHLD22	3370114	FRCHLDM62	3371624	GRUMAF9	3950905	GULSTM500	0141106
EAGLEBAX7	3240107	FRCHLD22	3370116	FRCHLDM62	3371626	GRUMAF9	3950102	GULSTM500	0141107
EAGLEBEC7	3240207	FRCHLD24	3370202	FRCHLDM62	3371628	GRUMANG134	3951000	GULSTM500	0141108
EIRVON20	5760102	FRCHLD24	3370204	FRCHLDM62	3371630	GRUMANG21	3951205	GULSTM520	0141202
EIRVON20	5760104	FRCHLD24	3370206	FRCHLDM62	3371632	GRUMANG44	3951602	GULSTM560	0141402
EIRVON20	5760202	FRCHLD24	3370208	FRCHLDM62	3374004	GRUMANG73	3951902	GULSTM560	0141404
EIRVON20	5760204	FRCHLD24	3370212	FRCHLDM62	3374006	GRUMANGA16	3950404	GULSTM560	0141406
EIRVON20	5760206	FRCHLD24	3370216	FUJI IM1	3730110	GRUMANGA16	3950405	GULSTM560	0141408
EIRVON20	5760207	FRCHLD24	3370220	FUNK FUNK	3720202	GRUMANGA16	3950406	GULSTM560	0141602
EIRVON20	5760103	FRCHLD24	3370302	GALAXYGX7	3760520	GRUMANGA16	3950409	GULSTM560	0141604
EMAIR MA1	6070102	FRCHLD24	3370402	GARCIAATROJAN	3270102	GRUMANGA16	3950410	GULSTM560	0141606
EMB 110	3260122	FRCHLD24	3370408	GEM 205	0380102	GRUMANGA16	3950412	GULSTM560	0141608
EMB 110	3260124	FRCHLD24	3370414	GENBALAX6	3760102	GRUMANGA16	3950413	GULSTM560	0141610
EMB 120	3260201	FRCHLD24	3370502	GENBALAX6	3760202	GRUMANGA16	3950414	GULSTM560	0141611
ENSTRMF28	3300404	FRCHLD24	3370508	GENBALSPRINT	3760402	GRUMANGA16T	3950407	GULSTM560	0141612
ENSTRMF28	3300406	FRCHLD24	3370514	GLASER300	3802509	GRUMANGA16T	3950408	GULSTM560	0141802
ENSTRMF28	3300407	FRCHLD24	3370516	GLASER400	3802510	GRUMANGA16T	3951102	GULSTM560	7630513
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ENSTRMF28	3300430	FRCHLD24	3370608	GLASFLL304	3800347	GRUMANGA16T	3960100	GULSTM560	0141714
ENSTRMF28	3300502	FRCHLD24	3370610	GLASFLL301	3800335	GRUMANGA16T	3960103	GULSTM560	0141716
ENSTRMF28	3300505	FRCHLD24	3370620	GLASFLL301	3800337	GRUMANGA16T	3960105	GULSTM560	3970404
ENSTRMF28	3300510	FRCHLD24	3370626	GLASFLL301	3800339	GRUMANGA16T	3960302	GULSTM560	0141720
ENSTRMF28	3300550	FRCHLD24	3370628	GLASFLL301	3800341	GRUMANGA16T	3952702	GULSTM560	0141722
ENTWICPHEBUS	1403014	FRCHLD71	3370802	GLASFLLKESTRL	3800343	GRUMANGA16T	3952801	GULSTM560	3970405
ENTWICPHEBUS	3321206	FRCHLDC119	3372102	GLASFLLIBELL	3800346	GRUMANGA16T	3952802	GULSTM560	3970410
ENTWICPHEBUS	3321210	FRCHLDC119	3372106	GOLDENCHIEF	3840102	GRUMANGA16T	3952803	GULSTM560	3970411
EVNAIR4500	3340106	FRCHLDC119	3372108	GOODYR813	3870148	GRUMANGA16T	3952804	GULSTM560	3970610
EXPER P2	056361T	FRCHLDC82	3372002	GOODYR813	3870152	GRUMANGA16T	3960201	GULSTM560	7630515
FARZWKDIAMAT	3550802	FRCHLDC82	3372004	GOODYRFG1D	3870220	GRUMANGA16T	3960202	GULSTM560	7630516
FARZWKDIAMAT	3550806	FRCHLDF27	3373002	GOODYRFG20	3870139	GRUMANGA16T	3960203	GULSTM560	7630517
FCKWLF44J	3540102	FRCHLDF27	3373004	GOODYR813	3870218	GRUMANGA16T	3960204	GULSTM560	7630518
FLEET 16B	3480502	FRCHLDF27	3373006	GOVT N22	3880102	GRUMANGA16T	3979904	GULSTM560	7630519
FLTCRFD25	3530102	FRCHLDF27	3373008	GROB 103CAT	1660202	GRUMANGA16T	3951202	GULSTM560	0630610
FLYGSTWETHE	3802219	FRCHLDF27	3373046	GROB 109	1660205	GRUMANGA16T	3951214	GULSTM560	0631410
FOKKERF27	4990614	FRCHLDF45	3371202	GROB 109	1660205	GRUMANGA16T	3951216	GULSTM560	3960106
FOKKERF27	4990617	FRCHLDFC2	3371102	GROB 109	1660205	GRUMANGA16T	3951216	GULSTM560	3960106
FOKKERF27	4990620	FRCHLDFH1100	4361415	GROB 109	1660205	GRUMANGA16T	3951216	GULSTM560	3960106
FOKKERF27	4990629	FRCHLDFH227	3373042	GROB 109	1660205	GRUMANGA16T	3951216	GULSTM560	3960106
FOMOCO4AT	3590102	FRCHLDFH227	3373050	GROB 109	1660205	GRUMANGA16T	3951216	GULSTM560	3960106
FOMOCO4AT	3590104	FRCHLDFH227	33731402	GROB 109	1660205	GRUMANGA16T	3951216	GULSTM560	3960106
FOMOCO5AT	3590202	FRCHLDFH227	3371504	GROB 109	1660205	GRUMANGA16T	3951216	GULSTM560	3960106
FOMOCO5AT	3590204	FRCHLDFH227	3371506	GROB 109	1660205	GRUMANGA16T	3951216	GULSTM560	3960106
FRANK 90	3680102	FRCHLDFH227	3371604	GROB 109	1660205	GRUMANGA16T	3951216	GULSTM560	3960106

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SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE
GULSTMG7	3960401	HILLERUH12	4360125	HWKSLYDH125	4230126	LAISTRPL15	5100203	LKHEEDP38	5260214		
H19/45	8141615	HILLERUH12	4360126	HWKSLYDH125	4230138	LAISTRPL46	5100101	LKHEEDP3P	5260211		
H19/45	8141616	HILLERUH12	4360127	HWKSLYDH125	423013M	LAISTRPL49	5100102	LKHEEDPV1	5260102		
H23/HTE	4360109	HILLERUH12	4360128	HWKSLYDH125	423013P	LEAR 23	5170102	LKHEEDPV1	5260106		
H23/HTE	4360111	HILLERUH12	4360130	HWKSLYDH125	4230140	LEAR 24	5170302	LKHEEDT33	5260401		
H23/HTE	4360123	HILLERUH12	4360131	HWKSLYDH125	4230158	LEAR 24	5170304	LKHEEDT33	5260402		
H23/HTE	4362303	HILLERUH12	4360132	HWKSLYDH125	4230160	LEAR 24	5170307	LKHEEDT33	5260406		
H23/HTE	4362305	HILLERUH12	4360135	HWKSLYDH125	4230160	LEAR 24	5170307	LKHEEDT33	5260406		
H34/55	8141810	HILLERUH12	4360809	HWKSLYDH125	1440502	LEAR 24	5170310	LKHEEDVEGA1	5261002		
H34/55	8141813	HILLERUH12	4362402	HWKSLYDH125	1440504	LEAR 24	5170311	LKHEEDVEGA5	5261202		
H34/55	8141819	HILLERUH12	4130402	HWKSLYDH125	1440506	LEAR 24	5170311	LKHEEDYO3A	5269501		
H34/55	8141823	HILLERUH12	4670101	HWKSLYDH125	6960202	LEAR 24	5170317	LKINTL402	5263406		
H37	8142302	HILLERUH12	4390102	HWKSLYDH125	4550502	LEAR 25	5170506	LORAL G222	3870221		
HAMFLUHF320	4071204	HILLERUH12	4380102	HWKSLYDH125	4551002	LEAR 25	5170509	LUSCMB1	5350102		
HARTMOWSM	4200102	HILLERUH12	4380115	HWKSLYDH125	4552002	LEAR 25	5170511	LUSCMB4	5350202		
HAWKINC97	1381603	HILLERUH12	4470402	HWKSLYDH125	5650304	LEAR 25	5170513	LUSCOM8	8190102		
HEAD AX888	05637T7	HILLERUH12	4470403	HWKSLYDH125	5650306	LEAR 25	5170514	LUSCOM8	8190104		
HEATH CNA40	4250102	HILLERUH12	4470404	HWKSLYDH125	5650308	LEAR 25	5170528	LUSCOM8	8190106		
HEATH LNB4	4250202	HILLERUH12	4470502	HWKSLYDH125	5650310	LEAR 25	5170530	LUSCOM8	8190108		
HELIO H250	4300302	HILLERUH12	4470504	HWKSLYDH125	0142002	LEAR 35	5170600	LUSCOM8	8190112		
HELIO H295	4300802	HILLERUH12	4471004	HWKSLYDH125	0142006	LEAR 35	5170601	LUSCOM8	8190114		
HELIO H295	4300803	HILLERUH12	4470702	HWKSLYDH125	0142010	LEAR 35	5170602	LUSCOM8	8190116		
HELIO H295	4301101	HILLERUH12	4470704	HWKSLYDH125	4500101	LEAR 35	5170603	LUSCOM8	8190118		
HELIO H295	4301102	HILLERUH12	4470706	HWKSLYDH125	4500102	LEAR 35	5170702	LUSCOM8	8190120		
HELIO H391	4300102	HILLERUH12	4470708	HWKSLYDH125	4500103	LEAR 55	5170706	LUSCOM8	8190122		
HELIO H391	4300106	HILLERUH12	4470718	HWKSLYDH125	4650502	LET L13	1360306	LUSCOM8	8190124		
HELIO H395	4300202	HILLERUH12	4470720	HWKSLYDH125	4651004	LKHEED10	5261302	LUSCOM8	8190126		
HELIO H395	4300206	HILLERUH12	4470722	HWKSLYDH125	4690502	LKHEED1011	5261314	LUSCOM8	8190128		
HELIO H700	4300400	HILLERUH12	4470728	HWKSLYDH125	4690506	LKHEED12A	5261402	LUSCOM8	8190130		
HELIO H800	4300500	HILLERUH12	4470730	HWKSLYDH125	4690516	LKHEED1329	5263102	LUSCOM8	8190132		
HELIO H800	4301002	HILLERUH12	4470731	HWKSLYDH125	4690604	LKHEED1329	5263106	LUSCOM8	8190154		
HELIO HST550	4301006	HILLERUH12	4470802	HWKSLYDH125	4762002	LKHEED1329	5263108	MACCHIAL60	5400106		
HELIO HST550	3376502	HILLERUH12	4470806	HWKSLYDH125	4800702	LKHEED1329	5263125	MACCHIAL60	5400108		
HILLERFH1100	4360102	HILLERUH12	4470805	HWKSLYDH125	4800704	LKHEED18	5261624	MACDOUG369	3027369		
HILLERUH12	4360103	HILLERUH12	4470805	HWKSLYDH125	4800704	LKHEED18	5261624	MAEL BA42	5450602		
HILLERUH12	4360104	HILLERUH12	2800902	HWKSLYDH125	4800802	LKHEED18	5261624	MARTIN202	5450602		
HILLERUH12	4360105	HILLERUH12	2800402	HWKSLYDH125	4800805	LKHEED18	5261634	MARTIN404	5450702		
HILLERUH12	4360110	HILLERUH12	2800404	HWKSLYDH125	8940101	LKHEED18	5261640	MARTINB26	5450106		
HILLERUH12	4360113	HILLERUH12	2800406	HWKSLYDH125	8940101	LKHEED18	5261642	MAULE M4	5460102		
HILLERUH12	4360114	HILLERUH12	2800410	HWKSLYDH125	8940101	LKHEED18	5261642	MAULE M4	5460104		
HILLERUH12	4360115	HILLERUH12	2800412	HWKSLYDH125	8940204	LKHEED382	5264130	MAULE M4	5460105		
HILLERUH12	4360116	HILLERUH12	2800414	HWKSLYDH125	8940204	LKHEED382	5264130	MAULE M4	5460106		
HILLERUH12	4360117	HILLERUH12	2800417	HWKSLYDH125	8940204	LKHEEDP2V	5260112	MAULE M4	5460108		
HILLERUH12	4360118	HILLERUH12	2800506	HWKSLYDH125	8940204	LKHEEDP2V	5260112	MAULE M4	5460112		
HILLERUH12	4360119	HILLERUH12	2800506	HWKSLYDH125	5090204	LKHEEDP2V	5260201	MAULE M4	5460114		
HILLERUH12	4360120	HILLERUH12	1500204	HWKSLYDH125	50901FB	LKHEEDP38	5260203	MAULE M4	5460128		
HILLERUH12	4360121	HILLERUH12	4210101	HWKSLYDH125	5070104	LKHEEDP38	5260204	MAULE M4	5460132		
HILLERUH12	4360122	HILLERUH12	4210112	HWKSLYDH125	5070104	LKHEEDP38	5260205	MAULE M4	5460133		
HILLERUH12	4360122	HILLERUH12	4230106	HWKSLYDH125	5100108	LKHEEDP38	5260206	MAULE M5	5460134		
HILLERUH12	4360124	HILLERUH12	4230110	HWKSLYDH125	5100202	LKHEEDP38	5260207	MAULE M5	5460135		

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MAULE M5	5460204	MILITARY47	8930110	MODFDUH12	4361101	NAMER B25	6400712	NAVAL N3N	6120202
MAULE M6	5460139	MILITARY204	118141G	MODFDUH12	4361301	NAMER B25	6400714	NAVIONNAVION	6150106
MAULE M6	5460160	MILLERUT1	5720102	MODFDUH12	4361501	NAMER B25	6400718	NAVIONNAVION	6150108
MAULE M7	5460170	MITCHEL101	2000102	MOONEYM20	5870202	NAMER F51	6402301	NAVIONNAVION	6150110
MAULE MX7	5460180	MNCOUP110	5810202	MOONEYM20	5870204	NAMER F51	6402302	NAVIONNAVION	6150118
MAULE MX7	5460185	MNCOUP110	5810204	MOONEYM20	5870206	NAMER F51	6402303	NAVIONNAVION	6150132
MCBEMSLARK95	4331020	MNCOUP90	5810102	MOONEYM20	5870208	NAMER F51	6402304	NAVIONNAVION	6150134
MCBEMSLARK95	5160202	MNCOUP90	5810104	MOONEYM20	5870210	NAMER F51	6402306	NAVIONNAVION	6150136
MCKINNG21	5550202	MNCOUP90	5810107	MOONEYM20	5870212	NAMER F51	6402307	NAVIONNAVION	6150140
MCKINNG21T	5550105	MNCOUP90	5810110	MOONEYM20	5870214	NAMER F51	6402309	NAVIONNAVION	6150142
MCKINNG21T	5550120	MNITEM18	5870102	MOONEYM20	5870219	NAMER F82	6401522	NAVIONNAVION	6150148
MCLISHFUNKB	5480102	MNITEM18	5870104	MOONEYM20	5870220	NAMER F86	6401714	NAVIONNAVION	6150160
MCLISHFUNKB	5480104	MNITEM18	5870106	MOONEYM20	5870221	NAMER NA260	6400452	NAVIONNAVION	6150162
MCLISHFUNKB	5480108	MNITEM18	5870108	MOONEYM20	5870308	NAMER NA260	6402502	NAVIONNAVION	6150166
MCLISHFUNKB	5480202	MNSLNFRMS760	5910102	MOONEYM20	5870312	NAMER NA260	6402504	NAVIONNAVION	6150170
MCLISHFUNKB	5480204	MNSLNFRMS760	5910106	MOONEYM20	5870314	NAMER NA260	6402505	NAVIONNAVION	6150172
MCLISHFUNKB	5480208	MODFD47	1180820	MOONEYM20	5870601	NAMER NA260	6402506	NAVIONNAVION	6150174
MEYERSMAC145	5650104	MODFD47	1180822	MOONEYM20	5870605	NAMER O47	6402202	NAVIONNAVION	6150178
MEYERSOTW	5650202	MODFD47	1180843	MOONEYM22	5870402	NAMER P64	6402408	NELSONBBI	6200102
MEYERSOTW	5650206	MODFD47	1180844	MORISY2000	5940102	NAMER T6	1922828	NICBEZ8G	6230202
MEYERSOTW	5650208	MODFD47	1180845	MOTH 60	6000102	NAMER T6	6400402	NIHON YS11	6330416
MILITARY204	1181401	MODFD47	1180846	MOTH 60	6000104	NAMER T6	6400404	NOORDNDC64	6330204
MILITARY204	1181407	MODFD47	1180847	MRCHTIF260	8121206	NAMER T6	6400405	NORD 1101	6380108
MILITARY204	1181408	MODFD47	118084C	MRCHTIF260	8121207	NAMER T6	6400406	NORD 3202	6383202
MILITARY204	1181409	MODFD47	118084F	MRCHTIS205	8120412	NAMER T6	6400407	NORD SV4	6383006
MILITARY204	1181410	MODFD47	118084R	MTSBSIMU2	5780404	NAMER T6	6400410	NORD SV4	8470102
MILITARY204	1181411	MODFD47	118084V	MTSBSIMU2	5780405	NAMER T6	6400412	NORTRPT38	6458005
MILITARY204	118141B	MODFD47	1181001	MTSBSIMU2	5780406	NAMER T6	6400414	NORWST35	6480102
MILITARY204	118141M	MODFD47	118100V	MTSBSIMU2	5780407	NAMER T6	6400415	NORWST35	6480104
MILITARY47	1180802	MODFD47	1181013	MTSBSIMU2	5780408	NAMER T6	6400416	NORWST35	6480108
MILITARY47	1180804	MODFD47	1181019	MTSBSIMU2	5780409	NAMER T6	6400417	NORWST35	6480126
MILITARY47	1180806	MODFD47	1181027	MTSBSIMU2	5780410	NAMER T6	6400418	NORWST40	6480114
MILITARY47	1180808	MODFD47	118103H	MTSBSIMU2	5780411	NAMER T6	6400419	NORWST50	6480116
MILITARY47	1180809	MODFD47	118103Z	MTSBSIMU2	5780412	NAMER T6	6400420	NORWST65	6480118
MILITARY47	1180810	MODFD47	1181060	MTSBSIMU2	5780413	NAMER T6	6400422	NORWST65	6480122
MILITARY47	1180813	MODFD47	1181063	MTSBSIMU2	5780414	NAMER T6	6400423	NORWST65	6480124
MILITARY47	1180815	MODFD47	1181065	MTSBSIMU2	5780602	NAMER T6	6400424	NORWST65	7680120
MILITARY47	1180817	MODFD47	1181066	MTSBSIMU300	5781300	NAMER T6	6400426	NORWST65	3801049
MILITARY47	1180904	MODFD47	1181067	MULTTECD16	9230602	NAMER T6	6400430	ORLHELH19	8141608
MILITARY47	1181002	MODFD47	1181068	MULTTECD16	9230604	NAMER T6	6400431	ORLHELH19	8141609
MILITARY47	1181005	MODFD47	1181071	MULTTECD16	9230606	NAMER T6	6400432	ORLHELH19	8141610
MILITARY47	1181006	MODFD47	1181072	MULTTECD16	9230608	NAMER T6	6400434	ORLHELH19	8141612
MILITARY47	1181007	MODFD47	1181074	MULTTECD16	9230610	NAMER T6	6400436	ORLHELH19	8141614
MILITARY47	1181010	MODFD47	1181306	MULTTECD16	9230612	NAMER T6	6400441	ORLHELH19	8141616
MILITARY47	1181504	MODFDUH12	4360601	NAMER A36	6400102	NAMER T6	6400442	ORLHELH19	8141618
MILITARY47	1181585	MODFDUH12	4360701	NAMER B25	6400702	NARDI FN333	6080102	ORLHELH19	814161G
MILITARY47	8930102	MCDFDUH12	4360702	NAMER B25	6400704	NATBAL752	6113310	ORLHELH19	814161G
MILITARY47	8930103	MODFDUH12	4360704	NAMER B25	6400705	NATBAL752	6113312	ORLHELH19	814161G
MILITARY47	8930105	MODFDUH12	4360801	NAMER B25	6400708	NATBAL752	6113317	ORLHELH19	8141818
MILITARY47	8930107	MODFDUH12	4360810	NAMER B25	6400710	NATBAL752	6113320	OTHEXMIPLIST	8140102

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OTHEXMTLP1ST	8140304	PIPER J3	7100506	PIPER PA18	7101816	PIPER PA28	7102807	PIPER TG8	7100102
OTHEXMTLP2	4800803	PIPER J3	7100508	PIPER PA18	7101818	PIPER PA28	7102808	PIRTLROC185	7140107
OTHEXMTLP3	4470904	PIPER J3	7100510	PIPER PA18	7101820	PIPER PA28	7102809	PIRTLROC185	7140189
OTHEXMTLP4	4470905	PIPER J3	7100511	PIPER PA18	7101822	PIPER PA28	7102810	PITCANPA4	7180102
OTHEXMTLP5	4800708	PIPER J3	7100512	PIPER PA18	7101824	PIPER PA28	7102811	PITCANPA5	7180202
PALMERCLIPPR	9570785	PIPER J3	7100514	PIPER PA18	7101826	PIPER PA28	7102813	PITCANPA6	7180302
PARKS P1T	6770102	PIPER J3	7100516	PIPER PA18	7101828	PIPER PA28	7102814	PITCANPA7	7180402
PARMNTCABAIR	6750102	PIPER J3	7100518	PIPER PA18	7101830	PIPER PA28	7102815	PITCANPA7	7180406
PARTENP66	6780101	PIPER J3	7100519	PIPER PA18	7101832	PIPER PA28	7102816	POST A	7280102
PARTENP68	6780105	PIPER J3	7100520	PIPER PA18	7101834	PIPER PA28	7102817	PRATT PRG1	7300102
PARTENP68	6780106	PIPER J3	7100522	PIPER PA18	7101836	PIPER PA28	7102818	PRATT PRG1	7300106
PASPEDW1	6790102	PIPER J3	7100526	PIPER PA18	7101837	PIPER PA28	7102819	PROPJT200	0140302
PDMLRYS1	5740102	PIPER J3	7100528	PIPER PA18	7101838	PIPER PA28	7102830	PROPJT200	0140312
PECOCKPJC	4160204	PIPER J3	7100527	PIPER PA18	7101902	PIPER PA30	7103002	PROPJT200	0140314
PERTH BIRD	6840122	PIPER J3	7100532	PIPER PA18	7101904	PIPER PA30	7103002	PROPJT200	0140314
PERTH BIRD	6840126	PIPER J3	7100536	PIPER PA20	7102002	PIPER PA31	7103102	PROPJT200	0140314
PERTH BIRD	6840132	PIPER J3	7100542	PIPER PA20	7102004	PIPER PA31	7103104	PROPJT200	0140314
PHESTH10	6880102	PIPER J3	7100546	PIPER PA20	7102006	PIPER PA31	7103105	PROPJT200	0140314
PIAGIOF136	6960102	PIPER J3	7100550	PIPER PA20	7102010	PIPER PA31	7103110	PROPJT200	0140314
PIAGIOF136	6960104	PIPER J3	7100552	PIPER PA20	7102012	PIPER PA31	7103111	RAVEN MG1000	7483202
PIAGIOF136	6960106	PIPER J3	7100552	PIPER PA22	7102202	PIPER PA31	7103120	RAVEN RX6	7480502
PIASEHUP	6980302	PIPER J3	7101104	PIPER PA22	7102204	PIPER PA31T	7103124	RAVEN S40	7480104
PIASEHUP	6980320	PIPER J4	7100602	PIPER PA22	7102206	PIPER PA31T	7103126	RAVEN S50	05604XW
PICARDA5	7001216	PIPER J4	7100604	PIPER PA22	7102208	PIPER PA31T	7103127	RAVEN S50	05604XW
PICARDA6	7001218	PIPER J4	7100605	PIPER PA22	7102212	PIPER PA32	7103206	RAVEN S55	7480402
PIGMANREARWN	7070104	PIPER J4	7100606	PIPER PA22	7102214	PIPER PA32	7103207	RAVEN S55	7480402
PIGMANREARWN	7070302	PIPER J4	7100608	PIPER PA22	7102216	PIPER PA32	7103209	RAVEN S57	7480507
PIGMANREARWN	7070308	PIPER J4	7100610	PIPER PA22	7102218	PIPER PA32	7103210	RAVEN S60	7480606
PILATSB4	7090103	PIPER J4	7100614	PIPER PA23	7102302	PIPER PA32	7103211	RAVEN S66	7480612
PILATSB4	7090104	PIPER J5	7100620	PIPER PA23	7102303	PIPER PA32	7103212	RAVEN S77	7480650
PILATSPC6	3375014	PIPER J5	7100702	PIPER PA23	7102304	PIPER PA32	7103213	REIMS 150	7500102
PILATSPC6	7090102	PIPER J5	7100706	PIPER PA23	7102305	PIPER PA32	7103214	REIMS 150	7530110
PILATSPC6	7090114	PIPER J5	7100708	PIPER PA23	7102306	PIPER PA32	7103215	REIMS 150	7530132
PILATSPC6	7090122	PIPER J5	7100712	PIPER PA23	7102308	PIPER PA32	7103216	REIMS 172	7530136
PILATSPC6T	3375011	PIPER L14	7100902	PIPER PA23	7102309	PIPER PA32	7103218	REIMS 172	7530139
PILATSPC6T	7090202	PIPER PA12	7101202	PIPER PA23	7102310	PIPER PA32	7103220	REIMS 172	7530204
PILATSPC6T	7090214	PIPER PA12	7101204	PIPER PA24	7102402	PIPER PA32	7103220	REIMS 172	7530206
PILATSPC7	7090401	PIPER PA15	7101402	PIPER PA24	7102403	PIPER PA34	7103405	REIMS 172	7530207
PINAIRSUPERV	7100102	PIPER PA15	7101502	PIPER PA24	7102404	PIPER PA34	7103406	REIMS 172	7530209
PIPER 600	7106001	PIPER PA16	7101602	PIPER PA24	7102406	PIPER PA36	7103610	REIMS 172	7530210
PIPER 600	7106010	PIPER PA17	7101702	PIPER PA24	7102408	PIPER PA36	7103612	REIMS 337	7535716
PIPER 600	7106012	PIPER PA18	7101802	PIPER PA24	7102409	PIPER PA36	7103620	REIMS 337	7535726
PIPER 600	7106014	PIPER PA18	7101804	PIPER PA25	7102502	PIPER PA38	7103812	REPBLCP47	7570405
PIPER 600	7106015	PIPER PA18	7101806	PIPER PA25	7102504	PIPER PA42	7104202	RHNFLORW3	7600504
PIPER 600	7106023	PIPER PA18	7101808	PIPER PA25	7102508	PIPER PA42	7104212	RKWEILL700	7630520
PIPER E2	7100304	PIPER PA18	7101809	PIPER PA28	7102802	PIPER PA42	7104225	RKWEILLNA265	6402608
PIPER F2	7100304	PIPER PA18	7101812	PIPER PA28	7102803	PIPER PA44	7104402	RKWEILLNA265	6402612
PIPER J2	7100402	PIPER PA18	7101813	PIPER PA28	7102804	PIPER PA44	7104404	RKWEILLNA265	6402614
PIPER J3	7100501	PIPER PA18	7101814	PIPER PA28	7102805	PIPER PA46	7104605	RKWEILLNA265	6402618
PIPER J3	7100502	PIPER PA18	7101815	PIPER PA28	7102806	PIPER T1040	7105101	RKWEILLNA265	7630101

SDR AIRCRAFT GROUP NAME  
FAA MANUFACTURER/MODEL CODES

FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME
7630104	RRKWEI265	3801551	SCHLERK	3801551	SCWZERSGM2	8050301	SKRSKYS76	8143007	SPHRTHCIRRUS	38019VE	
7630106	RRKWEI265	3801554	SCHLERK2K7	3801554	SCWZERTG3A	8050902	SKRSKYS76	8143010	SPHRTHJANUS	3802002	
7630107	RRKWEI265	3801559	SCHLERK8	3801559	SEMCO 30	8070504	SLINDS100	0140202	SPHRTHNIMBUS	3801923	
7630108	RRKWEI265	3801563	SCHLERK8	3801563	SEMCO CLINGER	8070802	SLINDS100	0140208	SPHRTHNIMBUS	3801925	
7640102	ROBSINR22	3801567	SCHLERK8	3801567	SEMCO MARKV	8070802	SLINDS100	9550102	SPHRTHNIMBUS	3801950	
7640104	ROBSINR22	38019VK	SCHLERK8	38019VK	SEMCO MODELT	8071701	SLINDS100	9550104	SPHRTHNIMBUS	38019VD	
7640110	ROBSINR22	38019VL	SCHLERK8	38019VL	SEMCO TC4	8071408	SLINDSB	0144306	SPHRTHNIMBUS	38019VF	
7640115	ROBSINR22	3801925	SCHLERKA6	3801925	SEMCO TC4	8071409	SLINDSB	0144308	SPHRTHNIMBUS	38019VG	
3801206	ROLSCHLS	3801528	SCHLERKA6	3801528	SIUOX 60	8250102	SLINDSB	4571008	SPHRTHNIMBUS	38019VJ	
3801208	ROLSCHLS	3801530	SCHLERKA6	3801530	SIUOX 90	8250106	SLNSBYTKITE	8320102	SPHRTHS	3801933	
3801211	ROLSCHLS	3801535	SCHLERKA6	3801535	SIREN C30	8270302	SLNSBYT45	8320304	SPHRTHS	3801939	
3801214	ROLSCHLS	3801537	SCHLERKA6	3801537	SKRSKYS39	8140502	SLNSBYT49	8321008	SPHRTHSH1	3801945	
3801250	ROLSCHLS	3801540	SCHLERKA6	3801540	SKRSKYS39	8140504	SLNSBYT50	8320402	SPHRTHSHK	3801920	
3801260	ROLSCHLS	3801542	SCHLERKA6	3801542	SKRSKYS51	8141102	SLNSBYT51	8320602	SPHRTHVENTUS	3802050	
7680106	ROOS 129	3801545	SCHLERKA6	3801545	SKRSKYS52	8141306	SLNSBYT53	8321508	SPHRTHVENTUS	3802051	
7680204	ROOS 1928	8059500	SCHWZH269	8059500	SKRSKYS52	8141308	SLNSBYT59	8321510	SPORT GEOPEN	3802433	
7680102	ROOS A1	0560221	SCHZOWMODELB	0560221	SKRSKYS55	8141602	SMITH 600	1710602	SPPTUZR4D	8451012	
7680104	ROOS A1	8050207	SCUZERSG2	8050207	SKRSKYS55	8141603	SMITH 600	1710606	SPPTUZR5	8451014	
7680312	ROOS PT	3952704	SCN2ERG164	3952704	SKRSKYS55	8141604	SMITH 600	8360602	SPPTUZR5	8451016	
7710102	ROSE A1	8050102	SCWZERSG1	8050102	SKRSKYS55	8141605	SMITH 600	8360604	STAR CAVALR	8480102	
7830302	RRYAN SCW	8050104	SCWZERSG1	8050104	SKRSKYS55	8141606	SMITH 600	8360605	STAR CAVALR	8480104	
7830502	RRYAN SCW	8050106	SCWZERSG1	8050106	SKRSKYS58	8141800	SMITH 600	8360606	STAR CAVALR	8480106	
7830504	RRYAN ST3	8050108	SCWZERSG1	8050108	SKRSKYS58	8141801	SMITH 600	8360608	STATE F	8521004	
7830402	RRYAN STA	8050110	SCWZERSG1	8050110	SKRSKYS58	8141804	SNIAS 350	8680800	STRBROSS25	8100525	
7830404	RRYAN STA	8050112	SCWZERSG1	8050112	SKRSKYS58	8141806	SNIAS 350	8680801	STRBROSS7	8100510	
7840102	RRYANARB	8050114	SCWZERSG1	8050114	SKRSKYS58	8141808	SNIAS 350	8680802	STRBROSSC7	8100512	
7840202	RRYANARB	8050116	SCWZERSG1	8050116	SKRSKYS58	8141809	SNIAS 350	8680803	STRBROSSD3	8100602	
7840204	RRYANARB	8050118	SCWZERSG1	8050118	SKRSKYS58	8141811	SNIAS 350	8680804	STRBROSSD3	8100606	
7850100	SAAB SF340	8050120	SCWZERSG1	8050120	SKRSKYS58	8141814	SNIAS AS332	8680808	STILOUSC2	7920304	
7860101	SAAB SF340	8050122	SCWZERSG1	8050122	SKRSKYS58	8141815	SNIAS AS332	8680809	STNSON10	8632002	
3801315	SCBFLGBERGFK	8050124	SCWZERSG1	8050124	SKRSKYS58	8141821	SNIAS SA318	8680506	STNSON10	8632004	
3801325	SCBFLGSF25	8050146	SCWZERSG1	8050146	SKRSKYS58	8141839	SNIAS SA318	8680508	STNSON10	8632102	
380135V	SCBFLGSF27	8050147	SCWZERSG1	8050147	SKRSKYS58T	8141803	SNIAS SA318	8680511	STNSON10	8632104	
380135X	SCBFLGSF28	8050148	SCWZERSG1	8050148	SKRSKYS58T	8141805	SNIAS SA330	8680612	STNSON10	8632104	
3801351	SCBFLGSF34	8050149	SCWZERSG1	8050149	SKRSKYS58T	8141807	SNIAS SA330	8680612	STNSON6000	8630904	
3801381	SCBFLGZUGVOG	8050151	SCWZERSG1	8050151	SKRSKYS58T	8141840	SNIAS SE313	8680610	STNSONA	8630901	
38019VN	SCHEMPDISCUS	8050153	SCWZERSG1	8050153	SKRSKYS58T	8141842	SOCATAMS880	5910304	STNSONJR	8630402	
38019VP	SCHEMPDISCUS	8050502	SCWZERSG2	8050502	SKRSKYS58T	8141844	SOCATAMS893	8402838	STNSONJR	8630406	
38019VG	SCHEMPDISCUS	8050202	SCWZERSG2	8050202	SKRSKYS61	8141826	SOCATAMS894	8402842	STNSONL1	8630404	
38015GW	SCHLERASK14	8050206	SCWZERSG2	8050206	SKRSKYS61	8142101	SOCATARALLYE	8400125	STNSONL1	8630114	
38015GR	SCHLERASK21	8050210	SCWZERSG2	8050210	SKRSKYS61	8142102	SOCATARALLYE	8400131	STNSONL5	8630202	
38015HR	SCHLERASK12	8050602	SCWZERSG2	8050602	SKRSKYS61	8142103	SOCATATB10	8680696	STNSONL5	8630204	
38015H2	SCHLERASW15	8050604	SCWZERSG2	8050604	SKRSKYS61	8142104	SOCATATB20	8680695	STNSONL5	8630206	
38015HZ	SCHLERASW15	8050608	SCWZERSG2	8050608	SKRSKYS61	8142107	SOCATATB20	8680697	STNSONL5	8630210	
3801507	SCHLERASW17	8050610	SCWZERSG2	8050610	SKRSKYS61	814210C	SOCATATB20	8680697	STNSONL5	8630212	
3801505	SCHLERASW19	8050612	SCWZERSG2	8050612	SKRSKYS62	8142202	SPARTNC2	8430102	STNSONL5	8630214	
3801508	SCHLERASW19	8050614	SCWZERSG2	8050614	SKRSKYS64	8142604	SPARTNC3	8430206	STNSONSM2	8630214	
3801503	SCHLERASW20	8051404	SCWZERSG2	8051404	SKRSKYS64	8142620	SPARTNC3	8430208	STNSONSM2	8630602	
3801506	SCHLERASW20	8051604	SCWZERSG2	8051604	SKRSKYS70	8143000	SPARTNC3	8430210	STNSONSM7	8630604	
3801581	SCHLERFI1	8051606	SCWZERSG2	8051606	SKRSKYS76	8143006	SPARTNC3	8430210	STNSONSM7	8630702	
					SPHRTHCIRRUS	8143006	SPARTNC3	8430210	STNSONSM7	8630704	



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SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE
STN5NSM8	8630802	SWRNGNSA226	8780122	TEAL TSC1A	8880102	TRYTEK65	0190928	UNIVAR415	0420722
STN5NSR10	8631602	SWRNGNSA226	8780404	TEAL TSC1A	8960404	TRYTEK65	0190930	UNIVAR415	0540102
STN5NSR10	8631604	SWRNGNSA226	8780405	TEMCO 11A	8890402	TRYTEK65	0190932	UNIVAR415	0540104
STN5NSR10	8631608	SWRNGNSA226	8780406	TEMCO 11A	8890404	TRYTEK65	0190202	UNIVAR415	5872014
STN5NSR10	8631614	SWRNGNSA227	8780603	TEMCO T35	8890601	TRYTEK65	0190402	UNIVAR415	5872018
STN5NSR10	8631616	SWRNGNSA227	8780610	TEMCO T35	8890602	TRYTEK65	0190404	VALENT17	9370100
STN5NSR10	8631620	SWRNGNSA227	8780620	TEMCO T35	8890602	TRYTEK65	0190204	VARGA 2150	5940202
STN5NSR5	8631102	SWRNGNSA26	8780102	TH55	4471002	TRYTEK65	0190204	VARGA 2150	5940202
STN5NSR5	8631104	SWRNGNSA26	8780112	THUNDRAX5	056040K	UNIPRO70	9250302	VARGA 2150	5940204
STN5NSR5	8631108	SZD 41	8821641	THUNDRAX5	056040M	UNIPROD145	9250502	VARGA 2180	9350104
STN5NSR5	8631110	SZD 45	8822002	THUNDRAX5	056040N	UNIVACGC1	9230102	VARGA 2180	9350105
STN5NSR5	8631112	SZD 48	8821648	THUNDRAX5	056040P	UNIVACGC1	9230104	VICKER745	9470204
STN5NSR6	8631202	TCRAFTK21	8850906	THUNDRAX5	8970100	UNIVACGC1	9230106	VICKER745	9470402
STN5NSR6	8631204	TCRAFTK	8850402	THUNDRAX6	8970102	UNIVACGC1	9230108	VICKER745	9470404
STN5NSR7	8631304	TCRAFTK	8850404	THUNDRAX7	8970105	UNIVACGC1	9230110	VICKER745	9470605
STN5NSR7	8631306	TCRAFTK	8850408	THUNDRAX7	8970106	UNIVACGC1	9230112	VIKINGB	9520102
STN5NSR8	8631404	TCRAFTK	8850410	THUNDRAX7	8970107	UNIVAR108	9230402	VIKINGB	9520104
STN5NSR8	8631408	TCRAFTK	8850412	THUNDRAX7	8970108	UNIVAR108	9230404	VIZOLAA21	1870101
STN5NSR8	8631412	TCRAFTK	8850414	THUNDRAX7	8970110	UNIVAR108	9230406	VLGTBWSAGITA	0550201
STN5NSR8	8631416	TCRAFTK	8850415	THUNDRAX7	8970120	UNIVAR108	9230408	VOUGHTF4U	2152608
STN5NSR9	8631502	TCRAFTK	8850416	THUNDRAX8	8970111	UNIVAR108	9230412	VOUGHTF4U	2152610
STN5NSR9	8631504	TCRAFTK	8850420	THUNDRAX8	8970112	UNIVAR108	9230414	VOUGHTF4U	2152616
STN5NSR9	8631508	TCRAFT15A	8850702	THUNDRAX9	8970115	UNIVAR108	9230416	WACO 9	9600102
STN5NSR9	8631518	TCRAFT20	8851002	TIIM COLEGT	8980102	UNIVAR108	9230418	WACO AGC8	9600602
STN5NSR9	8631526	TCRAFT20	8850202	TIIM N2T	8980202	UNIVAR108	9230418	WACO AGC8	9600602
STN5NSR9	8631802	TCRAFTBC	8850302	TMP SONNAVION	6150104	UNIVAR415	0420202	WACO ATO	9601212
STN5NSR77	8631804	TCRAFTBC	8850304	TMP SONNAVION	6150112	UNIVAR415	0420204	WACO AVN8	9601402
STN5NSW	8631902	TCRAFTBC	8850306	TMP SONNAVION	6150114	UNIVAR415	0420302	WACO BSO	9601204
STOLACUC1	8640202	TCRAFTBC	8850308	TMP SONNAVION	6150116	UNIVAR415	0420304	WACO CRG	9601001
STOLAMRC3	9220102	TCRAFTBC	8850310	TMP SONNAVION	6150120	UNIVAR415	0420306	WACO CSO	9601206
STOLAMRC3	3080202	TCRAFTBC	8850314	TMP SONNAVION	6150122	UNIVAR415	0420308	WACO CTO	9601214
STOLAMRC3	3080204	TCRAFTBC	8850316	TMP SONNAVION	6150130	UNIVAR415	0420310	WACO DSO	9601208
STRMAN3	8560202	TCRAFTBC	8850318	TOMCAT	1180816	UNIVAR415	0420312	WACO EGC	9600610
STRMAN3	8560208	TCRAFTBC	8850320	TOMCAT	1181061	UNIVAR415	0420314	WACO GC7	9600608
STRMAN4	8560302	TCRAFTBC	8850322	TOMCAT	1181069	UNIVAR415	0420316	WACO GXE	9600702
STRMAN4	8560306	TCRAFTBC	8850324	TOMCAT	1181069	UNIVAR415	0420318	WACO INF	9600416
STRMAN6	8560402	TCRAFTBC	9230916	TOMCAT	2390101	UNIVAR415	0420320	WACO JC	9600802
SUD CM170	3650101	TCRAFTBC	9230920	TOMCAT	2390202	UNIVAR415	0420322	WACO JC	9600806
SUD GY80	8681006	TCRAFTBC	9230924	TOMCAT	2390204	UNIVAR415	0420324	WACO JYM	9601504
SUPAC 14	8730402	TCRAFTBC	9230928	TOMCAT	2390302	UNIVAR415	0420326	WACO KMF	9600418
SUPAC 14	8730404	TCRAFTBF	8850326	TOMCAT	2390303	UNIVAR415	0420328	WACO P	9600302
SUPAC 1A	8730202	TCRAFTBF	8850332	TOMCAT	2390304	UNIVAR415	0420330	WACO P	9600402
SUPAC 1A	8730206	TCRAFTBF	8850336	TOMCAT	2390305	UNIVAR415	0420332	WACO Q	9600408
SUPAC 1A	8730208	TCRAFTBF	8850340	TRYTER65	0190406	UNIVAR415	0420334	WACO Q	9600504
SUPAC 1A	8730208	TCRAFTBF	8850346	TRYTER65	0190712	UNIVAR415	0420336	WACO Q	9601210
SUPAC V	8730302	TCRAFTBF	8850350	TRYTER65	0190716	UNIVAR415	0420338	WACO QC6	9600640
SUPAC V	8730306	TCRAFTBF	8850354	TRYTER65	0190920	UNIVAR415	0420340	WACO QC6	9600642
SWALOWSWALLOW	8760102	TCRAFTBF	8850356	TRYTER65	0190922	UNIVAR415	0420502	WACO QC6	9600644
SWALOWTP	8760202	TCRAFTTC6	8850102	TRYTER65	0190926	UNIVAR415	0420504	WACO QC6	9600646



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SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE
WACO R	9600304	ZENITHZ6	9950102				
WACO R	9600422	ZLIN 526	9970206				
WACO RE	9600902	ZLIN 526	9970212				
WACO RE	9600906	ZLIN 526	9970222				
WACO RE	9600910						
WACO RPT	9600340						
WACO S3HD	9600306						
WACO U	9600404						
WACO U	9600405						
WACO U	9600508						
WACO U	9600510						
WACO UC	9600662						
WACO UC	9600664						
WACO UKC	9600808						
WACO UKC	9600810						
WACO UKC	9600822						
WACO UKS	9600824						
WACO UKS	9600826						
WACO UKS	9600830						
WACO UMF	9600410						
WACO UMF7	9601302						
WACO UPF7	9601304						
WACO YK	9600816						
WACO YK	9600818						
WACO YK	9600832						
WACO YK	9600834						
WACO YK	9600835						
WACO YK	9600838						
WACO YMF	9600412						
WACO YOC	9600622						
WACO YOC	9600624						
WACO YPF	9601602						
WACO YPF	9601604						
WACO YPF	9601606						
WACO YPF	9601608						
WACO YPF	9601610						
WACO ZGC	9600609						
WACO ZGC8	9600604						
WESTLD30	9650160						
WHITE D25	9670102						
WING D1	9690302						
WINDKR AC7	9720209						
WSK M18	9810102						
WTRLY201	9630404						
WTRLY201	9630406						
WTRLY201	9630408						
WTRLY201	9630410						
WTRLY620	9630602						
WTRLY620	9630604						

SDR ENGINE GROUP NAME  
FAA MANUFACTURER/MODEL CODES

SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	
ALLSN 250B	03003	FRNKLN4AC176	27007	LYC	0360	41515	RRYCEDART	54504
ALLSN 250B	03012	FRNKLN4AC199	27008	LYC	0435	41516	RRYCEDART	54506
ALLSN 250C	03002	FRNKLN4AC199	27009	LYC	0435	41523	RRYCEDART	54507
ALLSN 250C	03011	FRNKLN4AC199	27010	LYC	0480	41527	RRYCEDART	54509
ALLSN 250C	03013	FRNKLN6A4150	27024	LYC	0480	41529	RRYCEDART	54513
ALLSN 501D	03004	FRNKLN6A4165	27025	LYC	0540	41532	RRYCEDART	54522
ALLSN 501D	03005	FRNKLN6A4200	27027	LYC	0540	41533	RRYCEGIPSY	20005
ALLSN 501D	03006	FRNKLN6A8215	27030	LYC	0540	41534	RRYCEGIPSY	20006
AMES TRS	04501	FRNKLN6A64	27026	LYC	0541	41536	RRYCEGIPSY	20007
AMTR 430	19050	FRNKLN6AV335	27020	LYC	0541	41539	RRYCEGRIFP	54501
AMTR	99999	FRNKLN6AV335	27040	LYC	0720	41546	RRYCEGRIFP	54501
AMTR	80000	FRNKLN6AV350	27043	LYC	R680	41540	RRYCESPEY	54519
AMTR	42501	FRNKLN6V4	27033	LYC	T53	41549	RRYCESPEY	54523
AMTR	42502	FRNKLN6V6245	27036	LYC	T55	41555	RRYCEVIPER	54550
AMTR	01502	GARRTTTF731	29002	MNASOC4		43504	RRYCEVIPER	54551
AMTR	01505	GARRTTTF731	01518	ONAN 18HP		47850	RRYCEVIPER	54552
AMTR	20003	GARRTTTF731	01514	ONAN 18HP		49001	RRYCEVIPER	54552
AMTR	13802	GARRTTTF731	01514	PCIKARDV1650		49001	RRYCEVIPER	54552
AMTR	17038	GE CF34	30015	PCIKARDV1650		49001	RRYCEVIPER	54552
AMTR	17037	GE CF6	30018	PIGMAN5		37002	RRYCEVIPER	54552
AMTR	17001	GE CF6	30020	PORSCH6784		51001	RRYCEVIPER	54552
AMTR	17002	GE CF700	30010	PWA JFTD12		52047	RRYCEVIPER	54552
AMTR	17003	GE CJ610	30002	PWA JT12		52042	RRYCEVIPER	54552
AMTR	17005	GE CJ610	30006	PWA JT15		52060	RRYCEVIPER	54552
AMTR	17006	GE CJ610	30008	PWA JT15		52112	RRYCEVIPER	54552
AMTR	17011	GE CT58	30011	PWA JT3C		52036	RRYCEVIPER	54552
AMTR	17012	GE CT58	30011	PWA JT3D		52039	RRYCEVIPER	54552
AMTR	17012	GE CT7	30030	PWA JT4		52037	RRYCEVIPER	54552
AMTR	17008	GE TC7TS	30029	PWA JT8		52044	RRYCEVIPER	54552
AMTR	17009	GLADENB5	37501	PWA JT8		52046	RRYCEVIPER	54552
AMTR	17013	GLADENK5	37503	PWA JT8		52048	RRYCEVIPER	54552
AMTR	17014	GLADENR5	37504	PWA JT8		52049	RRYCEVIPER	54552
AMTR	17015	GULF R670	31701	PWA JT8		52051	RRYCEVIPER	54552
AMTR	17020	JACOBPR755	35006	PWA JT8		52053	RRYCEVIPER	54552
AMTR	17022	JACOBPR755	35007	PWA PT6		52043	RRYCEVIPER	54552
AMTR	17033	JACOBPR755	35008	PWA PT6		52043	RRYCEVIPER	54552
AMTR	17025	JACOBPR755	35003	PWA PT6		52043	RRYCEVIPER	54552
AMTR	17026	JACOBPR755	35005	PWA PT6		52043	RRYCEVIPER	54552
AMTR	17032	JACOBPR755	35005	PWA PT6		52043	RRYCEVIPER	54552
AMTR	17040	LIMBAH1700	38602	PWA PT6		52043	RRYCEVIPER	54552
AMTR	17032	LYC ALF512	41581	PWA PT6		52043	RRYCEVIPER	54552
AMTR	17030	LYC ALF502	41580	PWA PT6		52043	RRYCEVIPER	54552
AMTR	17016	LYC LTF101	41565	PWA PT6		52043	RRYCEVIPER	54552
AMTR	20004	LYC LTS101	41560	PWA PT6		52043	RRYCEVIPER	54552
AMTR	22000	LYC O145	41501	PWA PT6		52043	RRYCEVIPER	54552
AMTR	26002	LYC O145	41502	PWA PT6		52043	RRYCEVIPER	54552
AMTR	26003	LYC O145	41503	PWA PT6		52043	RRYCEVIPER	54552
AMTR	27011	LYC O235	41505	PWA PT6		52043	RRYCEVIPER	54552
AMTR	27002	LYC O290	41506	PWA PT6		52043	RRYCEVIPER	54552
AMTR	27003	LYC O320	41508	PWA PT6		52043	RRYCEVIPER	54552
AMTR	27004	LYC O320	41509	PWA PT6		52043	RRYCEVIPER	54552
AMTR	27005	LYC O320	41510	PWA PT6		52043	RRYCEVIPER	54552
AMTR	27006	LYC O320	41510	PWA PT6		52043	RRYCEVIPER	54552
AMTR	27006	LYC O360	41514	PWA PT6		52043	RRYCEVIPER	54552
AMTR	27006	LYC O360	41514	PWA PT6		52043	RRYCEVIPER	54552
AMTR	27006	LYC O360	41514	PWA PT6		52043	RRYCEVIPER	54552
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AMTR	27006	LYC O360	41514	PWA PT6		52043	RRYCEVIPER	54552
AMTR</								

## **APPENDIX E**

### **COMMON ACRONYMS**

ADF	-	Automatic Direction Finder
CG	-	Capability Groups
DME	-	Distance Measuring Equipment
EFIS	-	Electronic Flight Information Systems
FAA	-	Federal Aviation Administration
FAR	-	Federal Aviation Regulations
GA	-	General Aviation
GAAA	-	General Aviation Activity and Avionics
HSI	-	Horizontal Situation Indicators
IFR	-	Instrument Flight Rules
ILS	-	Instrument Landing System
IMC	-	Instrument Meteorological Conditions
LRNAV	-	Long Range Navigation Equipment
MLS	-	Microwave Landing System
MSL	-	Mean Sea Level
NAS	-	National Airspace System
RNAV	-	Area Navigation Equipment
PAR	-	Precision Approach Equipment
SDR	-	Service Difficulty Reporting
SFAR-38	-	Special Federal Aviation Regulation 38
TCA	-	Traffic Control Airport or Tower Controlled Airport
VFR	-	Visual Flight Rules
VHF	-	Very High Frequency

VMC - Visual Meteorological Conditions  
VOR - Very High Frequency Omni-directional  
Radio Range

## GLOSSARY

Active Aircraft--All legally registered civil aircraft which flew one or more hours.

Aerial Application--See Primary Use.

Aerial Observation--See Primary Use.

Air Carriers--The commercial system of air transportation consisting of the certificated air carriers, air taxis (including commuters), supplemental air carriers, commercial operators of large aircraft, and air travel clubs.

Aircraft Type--A term used in this publication in grouping aircraft by basic configuration: fixed wing, rotorcraft, glider, dirigible, and balloon.

Air Taxi--See Primary Use.

Altitude Encoding--(Automatic Altitude Reporting)--An aircraft altitude transmitted via the Mode C transponder feature that is visually displayed in 100 feet increments on the ground radar scope having readout capability.

Area Navigation (RNAV)--A method of using navigation instruments that allows pilots flexibility to fly direct routes between waypoints or offset from published or established routes/airways at specified distance and direction.

Automatic Direction Finder (ADF)--An aircraft radio navigation system which senses and indicates the direction to a nondirectional radio beacon ground transmitter. Direction is indicated to the pilot as a magnetic bearing or as a relative bearing to the longitudinal axis of the aircraft.

Automatic Pilots--The roll, pitch, and yaw axis of an aircraft can be controlled by use of an automatic pilot. Information from VOR, ILS, MLS, and other navigation aids can be coupled to the automatic pilot for en route and approach flights.

Business Transportation--See Primary Use.

Commuter Air Carrier--See Primary Use.

Distance Measuring Equipment (DME)--Airborne and ground equipment used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid.

Executive Transportation--See Primary Use.

General Aviation--That portion of civil aviation which encompasses all facets of aviation except air carriers.

Glide Slope--See Instrument Landing System.

Instructional Flying--See Primary Use.

Instrument Flight Rules (IFR)--Rules governing the procedures for conducting instrument flight. Also a term used by pilots and controllers to indicate type of flight plan.

Instrument Landing System (ILS)--A precision instrument approach system which normally consists of the following electronic and visual aids:

- o Localizer--Provides course guidance to the runway.
- o Glide Slope--Provides vertical guidance during approach.
- o Marker Beacon--Provides aural and/or visual identification of a specific position along an instrument approach landing.

Localizer--See Instrument Landing System.

Long Range Navigation (LRNAV)--A method of navigation that permits navigation over long distances. This is in contrast to the relatively short range navigation provided by the VOR system.

Marker Beacon--See Instrument Landing System.

Microwave Landing System (MLS)--An instrument landing system operating in the microwave spectrum which provides lateral and vertical guidance to aircraft having compatible avionics equipment.

Other -See Primary Use.

Other Work Use--See Primary Use.

Personal Flying--See Primary Use.

Primary Use--The use category in which an aircraft flew the most hours. The eleven use categories are defined below:

- o Aerial Application--Agriculture, health, forestry, cloud seeding, firefighting, insect control.
- o Aerial Observation--Aerial mapping/photography, survey, patrol, fish spotting, search and rescue, hunting, highway traffic advisory, sightseeing (not FAR Part 135).
- o Air Taxi--FAR Part 135 passenger and cargo operations excluding commuter air carrier.
- o Business Transportation--Individual use of an aircraft for business transportation.
- o Commuter Air Carrier--Performs, under FAR Part 135, at least five scheduled round trips per week or carries mail.

- o **Executive/Corporate Transportation**--Company flying with a professional crew.
- o **Instructional**--Flying under the supervision of a flight instructor (excludes proficiency flying).
- o **Other**--Experimentation, R&D, testing, demonstrations, government, air shows, air racing, etc.
- o **Other Work Use**--Construction work (not FAR Part 135), helicopter hoist, parachuting, aerial advertising, towing gliders, etc.
- o **Personal**--Flying for personal reasons (excludes business transportation).
- o **Other**--Any other use of an aircraft not included above. (Example: experimentation, R&D, testing, demonstration, government).

**Radar Altimeter**--Aircraft instrument that makes use of the reflection of radio waves from the ground to determine the height of the aircraft above the surface.

**Registered Aircraft**--Aircraft registered with the Federal Aviation Administration.

**RNAV**--See Area Navigation.

**Transponder**--The airborne radar beacon receiver/transmitter portion of the Air Traffic Control Beacon System that automatically receives radio signals from interrogators on the ground and selectively replaces with specific reply pulse-on-pulse group only those interrogations being received on the mode to which it is set to respond. Each aircraft transponder is capable of replying to 4,096 codes as selected by the pilot. Provides the air traffic controller positive location and, in some cases, altitude information.

**VFR Flight**--Flight conducted in accordance with Visual Flight Rules.

**VHF Communications**--Provides radio voice communications between aircraft and ground stations, also between aircraft. Very High Frequency (VHF) is limited in angle (line of sight) and usually used for air traffic communications.

**VOR**--Very high frequency omnidirectional radio range. Used as the basis for navigation in the National Airspace System.

**Weather Radar**--Provides the flight crew with visual display of weather that could contain turbulence. The system's primary function is to assist in turbulence avoidance, although most airborne radar systems are also capable of terrain mapping.

## APPENDIX F

### DEFINITIONS OF ROTORCRAFT EXPANDED USE CATEGORIES

Aerial Application--Use of the aircraft for the distribution of things; includes operations under FAR Part 137, Agricultural Aircraft Operations, and also activities like crop dusting, insect control, fish stocking, fire fighting, and fertilization.

Aerial Observation--Use of the aircraft as an observation platform. Examples include: mapping, photography, survey, patrol, search and rescue, highway traffic advisory, sightseeing, ranching, surveillance, oil and mineral exploration, criminal pursuit, and fish spotting.

Air Taxi Charter--FAR Part 135: Air Taxi and Commercial Operators passenger and cargo operations, for hire, excluding commuters and EMS.

Business Transportation--Individual use of an aircraft for business reasons.

Commuter Air Carrier--Scheduled (at least five scheduled round trips per week) FAR Part 135, Air Taxi and Commercial Operators, passenger and cargo operations.

Company/Executive Transportation--Transportation of company personnel, guest, or cargo, with a professional crew (not under FAR Part 135, Air Taxi and Commercial Operators). Examples include: transporting parts or crews to off-shore oil rigs, transporting fire fighters to fires, and bank paper transfer.

Emergency Medical Service (EMS)--Transporting people for medical care, or transporting donor organs for transplant.

- o Under FAR Part 135, Air Taxi and Commercial Operators;
- o Not under FAR Part 135.

External Load--Operations under FAR Part 133, Rotorcraft External Load Operations. Examples include helicopter hoist and hauling logs.

Instructional--Flying under the supervision, or specific direction, of a flight instructor.

Other--R&D, experimentation, testing, air shows, demonstrations.

Other Work Use--Construction work, aerial advertising, pollinating, movie making.

Personal/Recreational--Individual flying for personal, non-business reasons.